Installation and Service Instructions

for use by heating contractor

VIESMANN

Vitotronic 100, Model GC1
Digital boiler control unit

Vitotronic 300-K, Model MW1S
Outdoor-reset logic digital cascade control, for installation in Custom Control Panel

Please file in Service Binder

VITOTRONIC 100, GC1
VITOTRONIC 300-K, MW1S

C SA® US

Certified as a component part
of Viessmann boilers only

5581 750 v1.3 11/2011

Safety, Installation and Warranty Requirements

Please ensure that this manual is read and uderstood before commencing installation. Failure to comply with the issues listed below and details printed in this manual can cause **product/property damage, severe personal injury,** and/or **loss of life**. Ensure all requirements below are understood and fulfilled (including detailed information found in manual subsections).

Licensed professional heating contractor
The installation, adjustment, service, and maintenance of this equipment *must be* performed by a licensed professional heating contractor.

■ *Please see section entitled "Important Regulatory and Installation Requirements."*

Advice to owner
Once the installation work is complete, the heating contractor must familiarize the system operator/ultimate owner with all equipment, as well as safety precautions/requirements, shut-down procedure, and the need for professional service annually before the heating season begins.

Product documentation
Read all applicable documentation before commencing installation. Store documentation near boiler in a readily accessible location for reference in the future by service personnel.

■ *For a listing of applicable literature, please see section entitled "Important Regulatory and Installation Requirements."*

Warranty
Information contained in this and related product documentation must be read and followed. *Failure to do so renders warranty null and void.*

Safety Terminology

The following terms are used throughout this manual to bring attention to the presence of potential hazards or important product information. **Please heed the advice given!**

⚠ DANGER
Indicates an imminently hazardous situation which, if not avoided, will result in death, serious injury or substantial product / property damage.

⚠ WARNING
Indicates an imminently hazardous situation which, if not avoided, could result in death, serious injury or substantial product / property damage.

⚠ CAUTION
Indicates an imminently hazardous situation which, if not avoided, may result in minor injury or product / property damage.

IMPORTANT
Helpful hints for installation, operation or maintenance which pertain to the product.

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Product information

Vitotronic 100, GC1, and Vitotronic 300-K, MW1S
Only for integration/installation on Viessmann boilers and for control panel mounting.

These application examples are only recommendations, and must therefore be checked on site for completeness and function.

Vitotronic 100, GC1, without LON communication module as part of the standard delivery.
LON module (PN: 7172 173) is supplied with control panel.
Vitotronic 300-K, MW1S, with integral LON communication module.

Summary of system versions

	Boiler	Characteristics	Page
1	Vitorond	Shunt pump for controlling return temperature for each boiler	9
2	Vitorond	Common supply pump and low-pressure manifold	11
3		Three-way mixing valve for controlling return temperature	14
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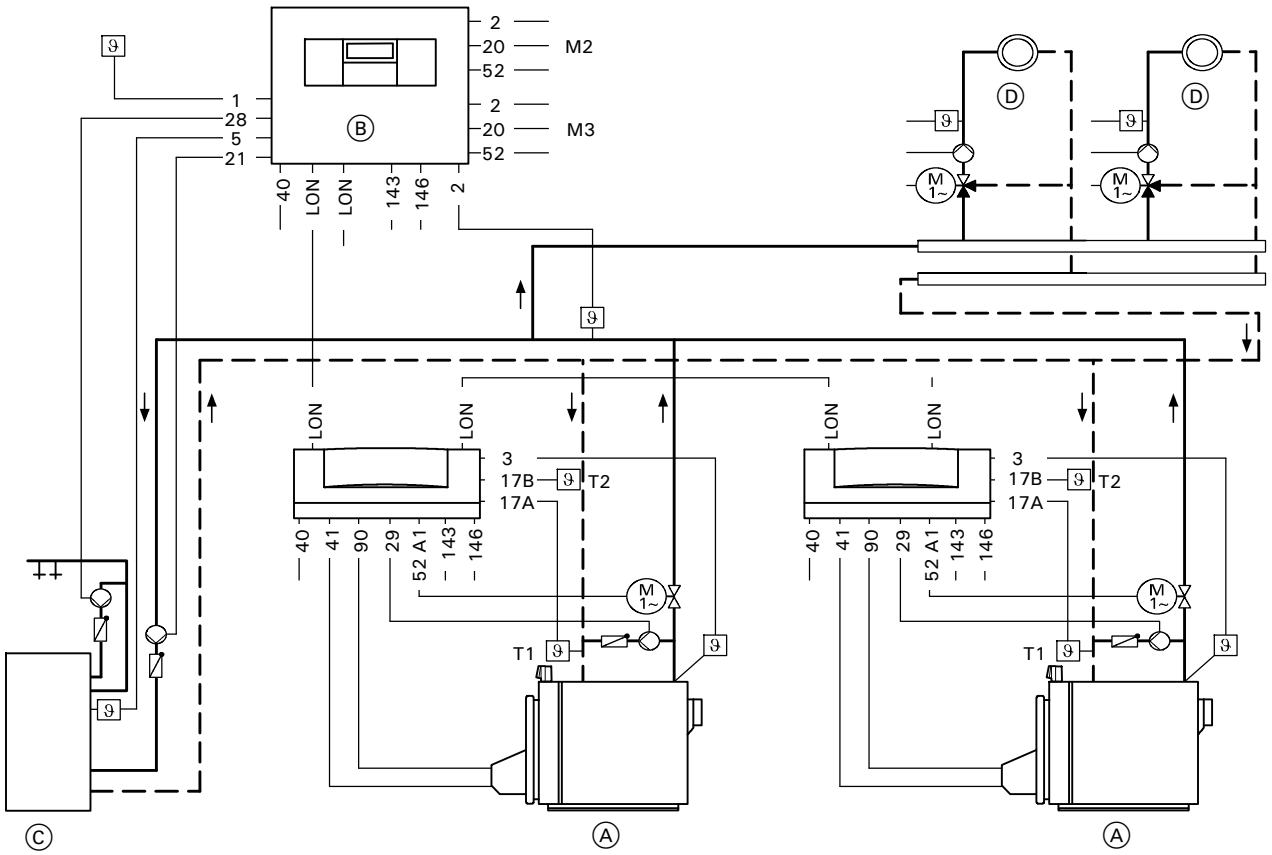
Please note that the following examples are simplified conceptual drawings only!
Piping and necessary componentry must be field verified.
A low water cut off (LWCO) must be installed where required by local codes.
Proper installation and functionality in the field is the responsibilty of the heating contractor.

System version 1

Return temperature control of each boiler with shunt pump
Vitorond 200



Ⓐ Boiler with Vitotronic 100, GC1
Ⓑ Vitotronic 300-K, MW1S
Ⓒ DHW tank
Ⓓ Mixing valve circuit

Plug

1		Outdoor temperature sensor
2		Supply temperature sensor common heating supply
2	M2/M3	Supply temperature sensor mixing valve circuit 2 or 3
3		Boiler temperature sensor
5		DHW tank temperature sensor
17	A	Temperature sensor T1
17	B	Temperature sensor T2
20	M2/M3	Heating circuit pump mixing valve circuit 2 or 3
21		DHW pump
28		DHW recirculation pump
29		Shunt pump
40		Power supply, 120 VAC, 60 Hz
41		Burner (burner stage 1)
52	A1	Motorized isolation valve
52	M2/M3	Mixing valve actuator circuit 2 or 3
90		Burner (burner stage 2/mod.)
143/146		External connections (see page 39)

System version 1 (cont.)

Codings must be set on **every** Vitotronic 100, GC1.

Vitotronic 100, GC1

Required coding	
01: 2	Multi-boiler system with cascade control via LON BUS
02: 2	Modulating burner operation*1
03: 1	Oil fired operation (non-reversible)*1
07: 2 07: 3 07: 4	Setting the boiler number on the Vitotronic of boiler 2 boiler 3 boiler 4
77: 2 77: 3 77: 4	Setting the LON participant number on the Vitotronic of boiler 2 boiler 3 boiler 4
Automatic changeover	
4A: 1	Connecting the T1 temperature sensor to plug 17 A
4b: 1	Connecting the T2 temperature sensor to plug 17 B

Vitotronic 333, MW1S

Required coding	
00: 3, 00: 4, 00: 7, or 00: 8	Without system circuit A1*1
35: 1 35: 2 35: 3	Vitotronic 300-K, MW1S with one Vitotronic 100, GC1 two Vitotronic 100, GC1 three Vitotronic 100, GC1

Possible applications
Heating systems with distribution manifold installed close to the boiler. The boiler water volume flow will be reduced via the motorized isolation valve.

Temperature sensor T2 activates the shunt pump if the required minimum return temperature is not reached. If this fails to achieve the required minimum return temperature, the boiler water volume flow must be reduced by at least 50 % via temperature sensor T1, via the isolation valve or the heating circuit control units. Where the T1 temperature sensor cannot affect the motorized isolation valves it must, instead, regulate the mixing valves of the heating circuits downstream.

Size the shunt pump to approx. 30 % of the total throughput capacity of the boiler.

The boiler receives optimum protection when controlling the heating circuits via Vitotronic 300-K, MW1S or a Vitotronic 200-H connected to the boiler control unit. No additional on-site protective measures are required.

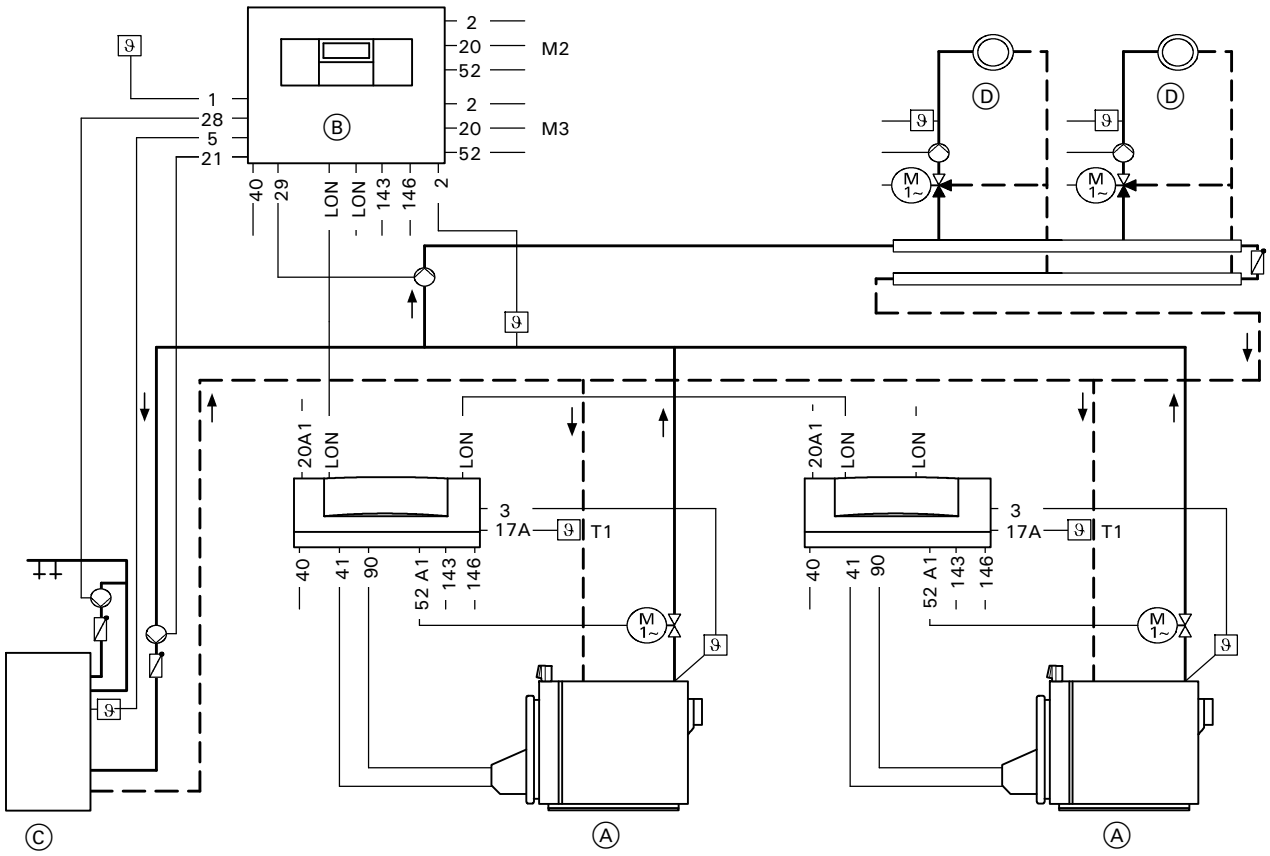
IMPORTANT

The connection diagram is only a recommendation and needs to be verified for completeness and functionality at the installation site. Single-phase and three-phase pumps must be connected with field supplied motor contactors and/or motor starters.

*1 If required.

System version 2

Common supply pump and low pressure distribution manifold
Vitorond 200



Ⓐ Boiler with Vitotronic 100, GC1
Ⓑ Vitotronic 300-K, MW1S
Ⓒ DHW tank
Ⓓ Mixing valve circuit

Plug

1	Outdoor temperature sensor	
2	Supply temperature sensor common heating supply	
2 M2/M3	Supply temperature sensor mixing valve circuit 2 or 3	
3	Boiler temperature sensor	
5	DHW tank temperature sensor	
17 A	Temperature sensor T1	
20 A1	Closing the mixing valves with external heating circuit control units	
20 M2/M3	Heating circuit pump mixing valve circuit 2 or 3	
21	DHW pump	
28	DHW recirculation pump	
29	Common supply pump	
40	Power supply, 120 VAC 60 Hz	
41	Burner (burner stage 1)	
52 A1	Motorized isolation valve	
52 M2/M3	Mixing valve actuator circuit 2 or 3	
90	Burner (burner stage 2/mod.)	
143/146	External connections (see page 39)	

System version 2 (cont.)

Coding must be set on **every** Vitotronic 100, GC1.

Vitotronic 100, GC1

Required coding	
01: 2	Multi-boiler system with cascade control via LON BUS
02: 2	Modulating burner operation*1
03: 1	Oil fired operation (non-reversible)*1
07: 2 07: 3 07: 4	Setting the boiler number on the Vitotronic of boiler 2 boiler 3 boiler 4
0d : 1	Therm-Control controls the mixing valves of downstream heating circuits
77: 2 77: 3 77: 4	Setting the LON participant number on the Vitotronic of boiler 2 boiler 3 boiler 4
Automatic changeover	
4A: 1	Connecting the T1 temperature sensor to plug 17 A

Vitotronic 300-K, MW1S

Required coding	
00: 3, 00: 4, 00: 7, or 00: 8	Without system circuit A1*1
35: 1 35: 2 35: 3	Vitotronic 300-K, MW1S with one Vitotronic 100, GC1 two Vitotronic 100, GC1 three Vitotronic 100, GC1
4d: 0	Common supply pump on plug 29

*1
If required.

System version 2 (cont.)

Possible applications
If the distribution manifold is located in a remote location (> 20 m / 65 ft). The heat transfer to the heating circuits must be able to be reduced.

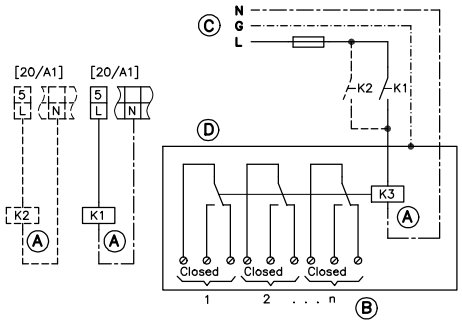
Temperature sensor T1 reduces or closes the mixing valves if the required minimum return temperature is not achieved. Size the common supply pump to 110 % of the total flow rate of the heating system.

The boiler receives optimum protection when controlling the heating circuits via Vitotronic 300-K, MW1S or a Vitotronic 200-H connected to the boiler control unit. No additional on-site protective measures are required.

IMPORTANT

The connection diagram is only a recommendation and needs to be verified for completeness and functionality at the installation site. Single-phase and three-phase pumps must be connected with field supplied motor contactors and/or motor starters.

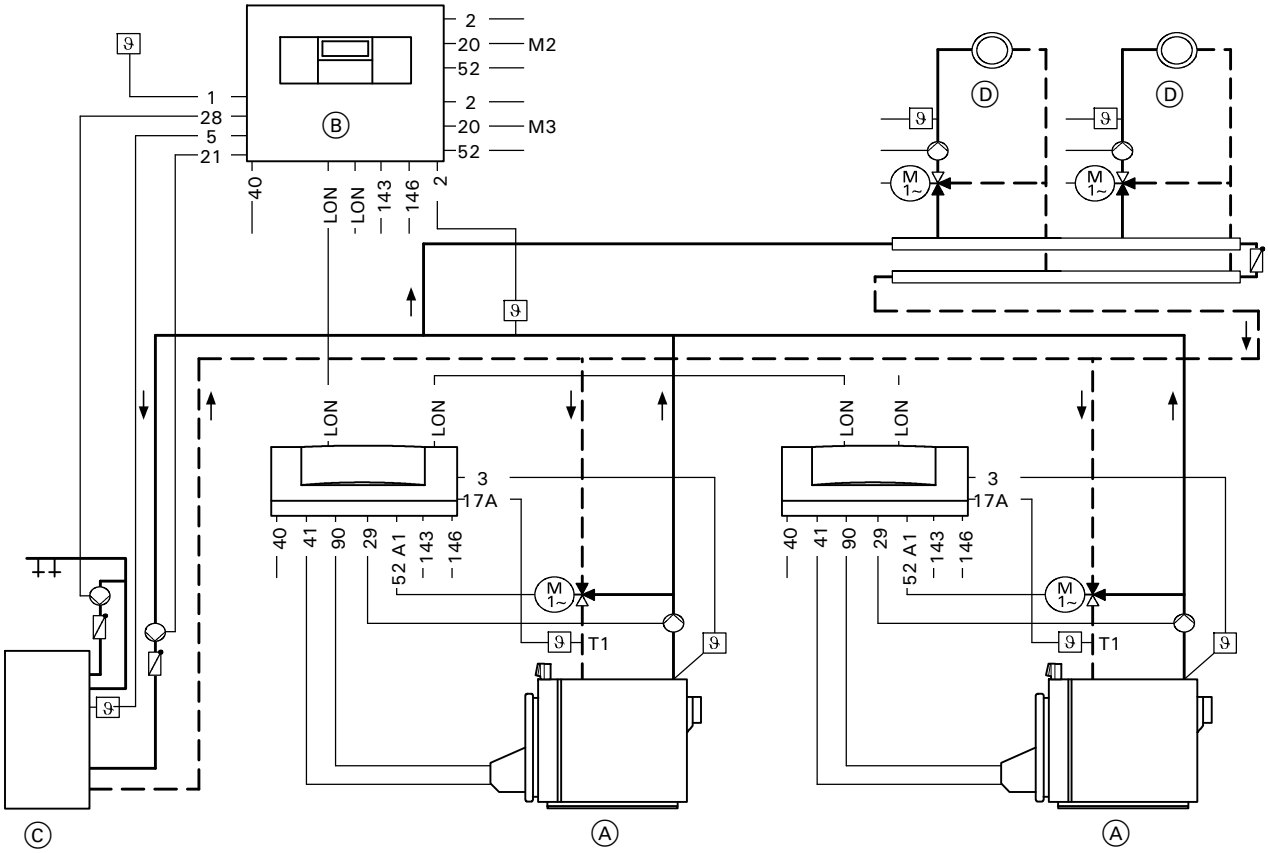
Temperature sensor T1
Wiring diagram for reducing the volume flow rate in heating systems with heating circuit control units, which are not connected to the boiler control unit via the LON BUS.
Necessary coding: 4C : 2.



20 A1 Closing mixing valves (Vitotronic 100, GC1)
Ⓐ Contactor relay
Ⓑ Downstream heating circuit control unit
Switching contact closed: signal for close mixing valve(s)
Ⓒ Power connection 120 VAC 60 Hz
Ⓓ Junction box, field supplied

System version 3

Controlling the return temperature with a 3-way mixing valve
Vitorond 200



Ⓐ Boiler with Vitotronic 100, GC1
Ⓑ Vitotronic 300-K, MW1S
Ⓒ DHW tank
Ⓓ Mixing valve circuit

Plug

1	Outdoor temperature sensor
2	Supply temperature sensor common heating supply
2 M2/M3	Supply temperature sensor mixing valve circuit 2 or 3
3	Boiler temperature sensor
5	DHW tank temperature sensor
17 A	Temperature sensor T1
20 M2/M3	Heating circuit pump mixing valve circuit 2 or 3
21	DHW pump
28	DHW recirculation pump
29	Boiler circuit pump
40	Power supply, 120 VAC 60 Hz
41	Burner (burner stage 1)
52 A1	Three-way mixing valve
52 M2/M3	Mixing valve actuator circuit 2 or 3
90	Burner (burner stage 2/mod.)
143/146	External connections (see page 39)

System version 3 (cont.)

Coding must be set on **every** Vitotronic 100, GC1.

Vitotronic 100, GC1

Required coding	
01: 2	Multi-boiler system with cascade control via LON BUS
02: 2	Modulating burner operation*1
03: 1	Oil fired operation (non-reversible)*1
07: 2 07: 3 07: 4	Setting the boiler number on the Vitotronic of boiler 2 boiler 3 boiler 4
0C: 1	Constant regulation of the return temperature
4d: 2	Boiler circuit pump on plug 29
77: 2 77: 3 77: 4	Setting the LON participant number on the Vitotronic of boiler 2 boiler 3 boiler 4
Automatic changeover	
4A: 1	Connecting the T1 temperature sensor to plug 17 A

Vitotronic 300-K, MW1S

Required coding	
00: 3, 00: 4, 00: 7, or 00: 8	Without system circuit A1*1
35: 1 35: 2 35: 3	Vitotronic 300-K, MW1S with one Vitotronic 100, GC1 two Vitotronic 100, GC1 three Vitotronic 100, GC1

Possible applications
For example, older heating systems or systems in nurseries and/or systems where downstream heating circuits cannot be controlled.

Temperature sensor T1 closes the three-way mixing valve in proportion and therefore protects the boiler, if the required minimum return temperature is not achieved.

Please note:
Size the boiler circuit pump for each boiler so that their volume flow rate is at least as large as the max. total heating circuit volume flow rate.
Recommendation: 110 %

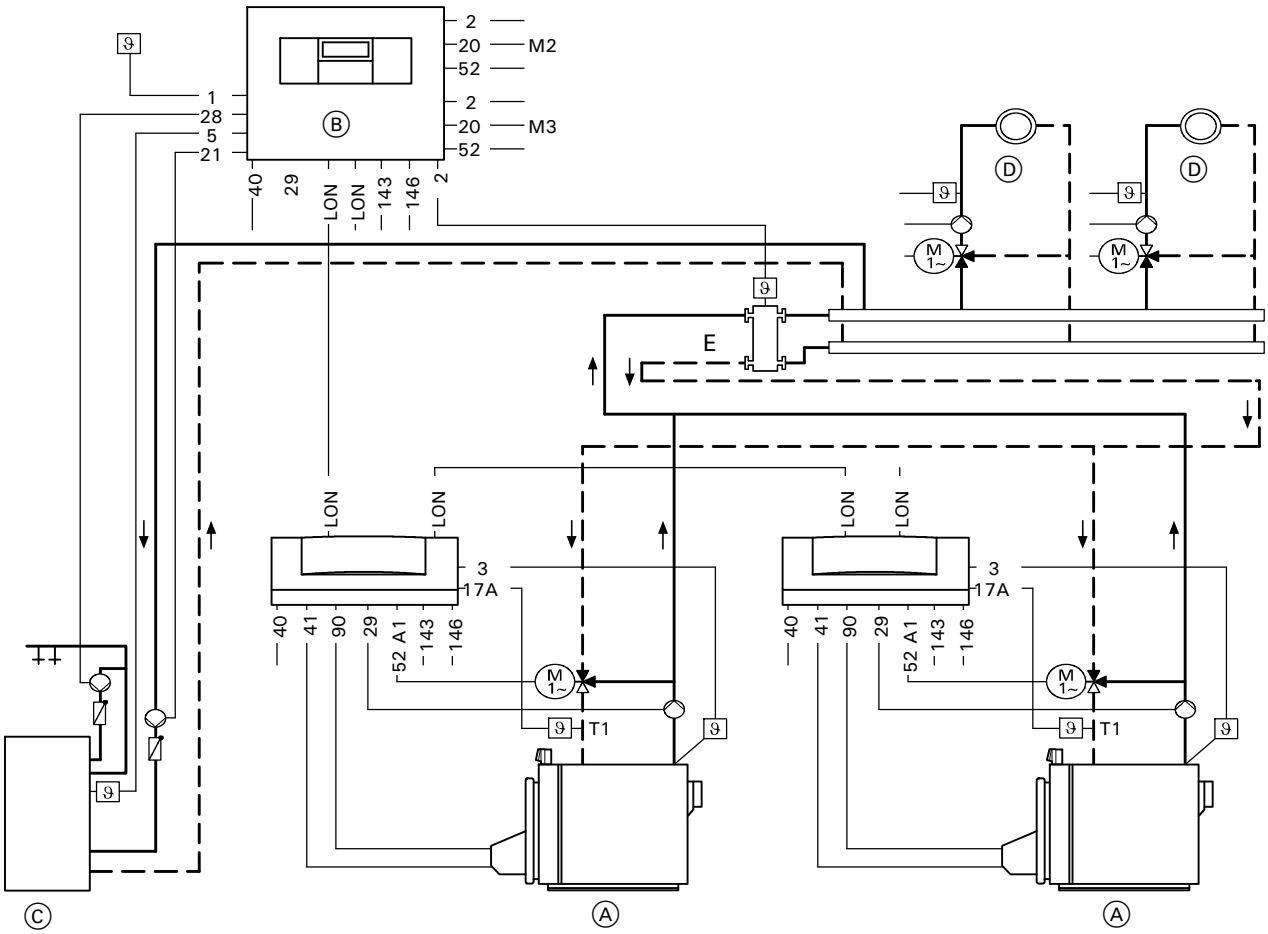
IMPORTANT

The connection diagram is only a recommendation and needs to be verified for completeness and functionality at the installation site. Single-phase and three-phase pumps must be connected with field supplied motor contactors and/or motor starters.

*1 If required.

System version 4

Controlling the return temperature with a low loss header and a three-way mixing valve
Vitorond 200



Ⓐ Boiler with Vitotronic 100, GC1
Ⓑ Vitotronic 300-K, MW1S
Ⓒ DHW tank
Ⓔ Low loss header
Ⓓ Mixing valve circuit

Plug

1	Outdoor temperature sensor
2	Supply temperature sensor common heating supply
2 M2/M3	Supply temperature sensor mixing valve circuit 2 or 3
3	Boiler temperature sensor
5	DHW tank temperature sensor
17 A	Temperature sensor T1
20 M2/M3	Heating circuit pump mixing valve circuit 2 or 3
21	DHW pump
28	DHW recirculation pump
29	Boiler circuit pump
40	Power supply, 120 VAC 60 Hz
41	Burner (burner stage 1)
52 A1	Three-way mixing valve
52 M2/M3	Mixing valve actuator circuit 2 or 3
90	Burner (burner stage 2/mod.)
143/146	External connections (see page 39)

System version 4 (cont.)

Coding must be set on **every** Vitotronic 100, GC1.

Vitotronic 100, GC1

Required coding	
01: 2	Multi-boiler system with cascade control via LON BUS
02: 2	Modulating burner operation*1
03: 1	Oil fired operation (non-reversible)*1
07: 2 07: 3 07: 4	Setting the boiler number on the Vitotronic of boiler 2 boiler 3 boiler 4
0C: 1	Constant regulation of the return temperature
4d: 2	Boiler circuit pump on plug 29
77: 2 77: 3 77: 4	Setting the LON participant number on the Vitotronic of boiler 2 boiler 3 boiler 4
Automatic changeover	
4A: 1	Connecting the T1 temperature sensor to plug 17 A

Vitotronic 300-K, MW1S

Required coding	
00: 3, 00: 4, 00: 7, or 00: 8	Without system circuit A1*1
35: 1 35: 2 35: 3	Vitotronic 300-K, MW1S with one Vitotronic 100, GC1 two Vitotronic 100, GC1 three Vitotronic 100, GC1

Possible applications
For example, older systems or systems in nurseries and/or systems, where the hydraulic conditions cannot be clearly defined and/or systems where downstream heating circuits cannot be controlled.

Temperature sensor T1 closes the three-way mixing valve in proportion and therefore protects the boiler, if the required minimum return temperature is not achieved. The temperature sensor in the low loss header controls the supply temperature.

Please note:
Size the boiler circuit pumps for each boiler so that their volume supply is at least as large as the max. total heating circuit volume supply.
Recommendation: 110 %

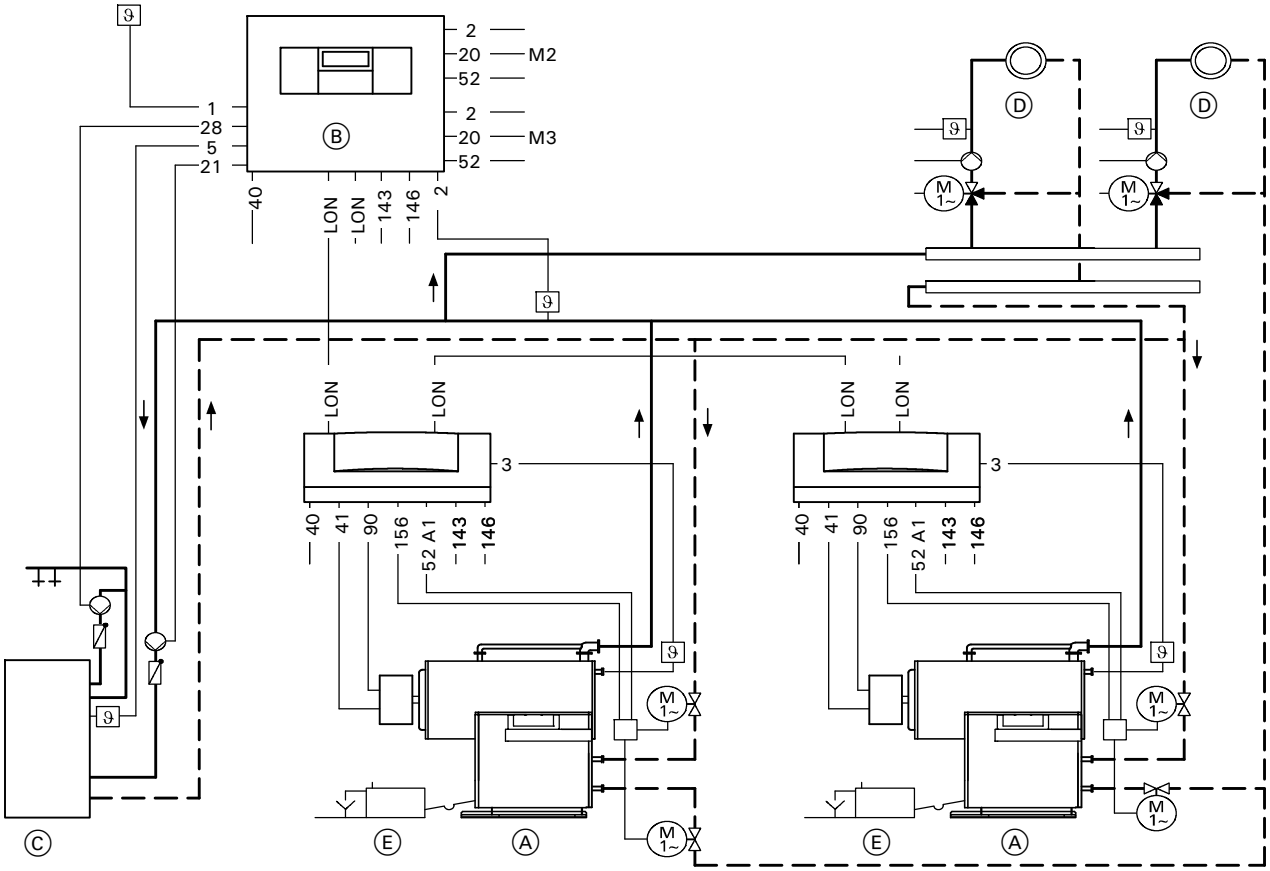
IMPORTANT

The connection diagram is only a recommendation and needs to be verified for completeness and functionality at the installation site. Single-phase and three-phase pumps must be connected with field supplied motor contactors and/or motor starters.

*1 If required.

System version 5

Heating circuit and one low temperature heating circuit
Vitocrossal 300



Ⓐ Boiler with Vitotronic 100, GC1
Ⓑ Vitotronic 300-K, MW1S
Ⓒ DHW tank
Ⓓ Mixing valve circuit
Ⓔ Neutralising system

Plug

1		Outdoor temperature sensor
2		Supply temperature sensor common heating supply
2	M2/M3	Supply temperature sensor mixing valve circuit 2 or 3
3		Boiler temperature sensor
5		DHW tank temperature sensor
90		Burner (burner stage 2/mod.)
20	M2/M3	Heating circuit pump mixing valve circuit 2 or 3
21		DHW pump
28		DHW recirculation pump
40		Power supply, 120 VAC 60 Hz
41		Burner (burner stage 1)
52	A1	Motorized isolation valve
52	M2/M3	Mixing valve actuator circuit 2 or 3
143/146		External connections (see page 39)

System version 5 (cont.)

Codings must be set on **every** Vitotronic 100, GC1.

Vitotronic 100, GC1

Required coding	
01: 2	Multi-boiler system with cascade control via LON BUS
02: 2	Modulating burner operation*1
07: 2 07: 3 07: 4	Setting the boiler number on the Vitotronic of boiler 2 boiler 3 boiler 4
0d: 0	Without Therm-Control
77: 2 77: 3 77: 4	Setting the LON participant number on the Vitotronic of boiler 2 boiler 3 boiler 4

Vitotronic 300-K, MW1S

Required coding	
00: 3, 00: 4, 00: 7, or 00: 8	Without system circuit A1*1
35: 1 35: 2 35: 3	Vitotronic 300-K, MW1S with one Vitotronic 100, GC1 two Vitotronic 100, GC1 three Vitotronic 100, GC1
3C: 0	Condensing strategy

*1
If required.

System version 5 (cont.)

Possible applications
Vitocrossal 300 is operated via a Viessmann boiler control unit with outdoor reset function, modulating boiler water temperature, and load-dependent sequential control – two-stage or modulating burners are controlled.

Vitocrossal 300 is equipped with two return connections. The heating circuits with the higher return temperature are connected to the upper return connection, and those with lower return temperatures to the lower return plug. Please note: Connect at least 15 % of the rated output to the lower return connection.

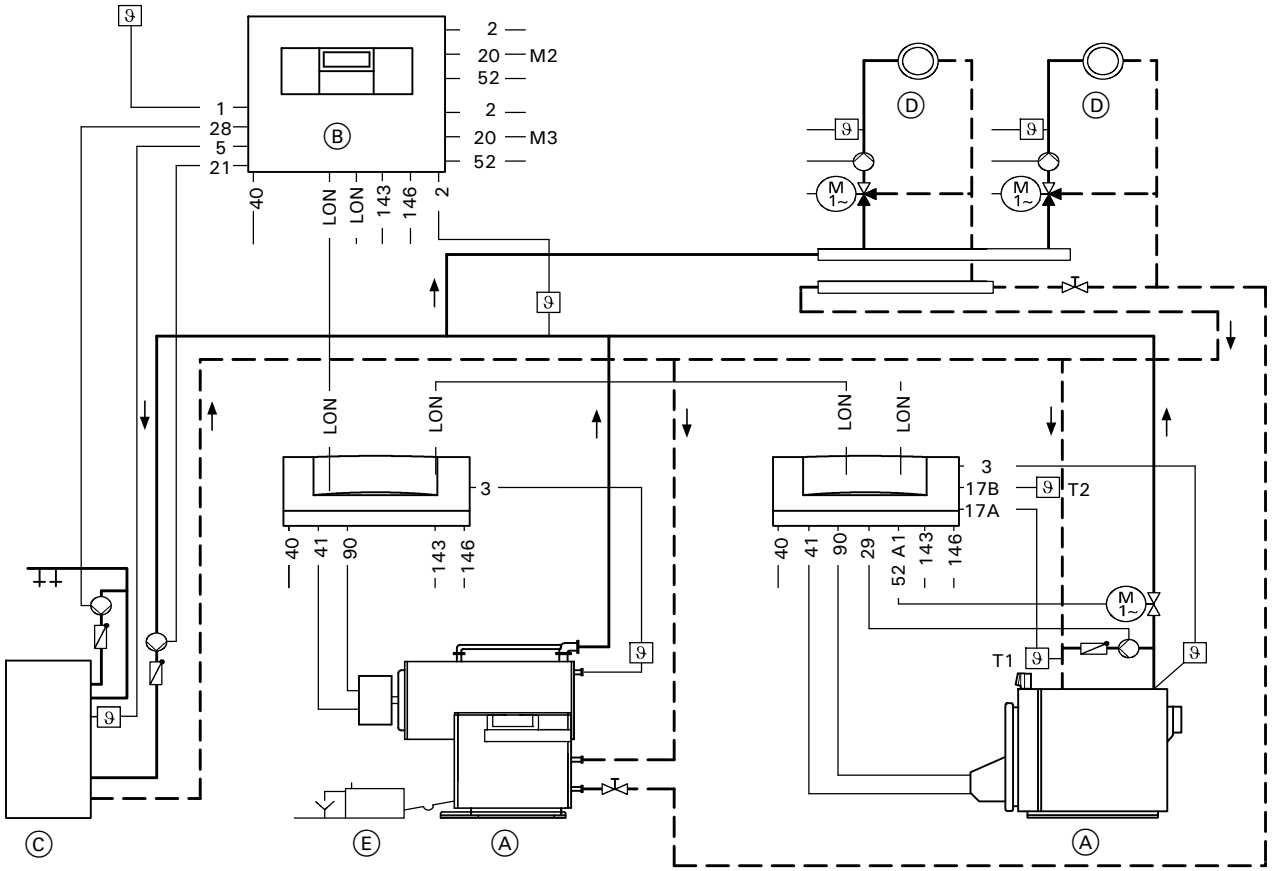
Due to the LON-BUS communication between controls, a boiler supply temperature is automatically set. This temperature is based on the highest required mixing valve circuit temperature plus adjustable differential.

IMPORTANT

The connection diagram is only a recommendation and needs to be verified for completeness and functionality at the installation site. Single-phase and three-phase pumps must be connected with field supplied motor contactors and/or motor starters.

System version 6

Heating circuit and one low temperature heating circuit plus Vitorond with shunt pump
Vitocrossal 300
Vitorond 200, 125 kW-500 kW



Ⓐ Boiler with Vitotronic 100, GC1
Ⓑ Vitotronic 300-K, MW1S
Ⓒ DHW tank
Ⓓ Mixing valve circuit
Ⓔ Neutralizing system

Plug

1		Outdoor temperature sensor
2		Supply temperature sensor common heating supply
2	M2/M3	Supply temperature sensor mixing valve circuit 2 or 3
3		Boiler temperature sensor
5		DHW tank temperature sensor
17	A	Temperature sensor T1
17	B	Temperature sensor T2
20	M2/M3	Heating circuit pump mixing valve circuit 2 or 3
21		DHW pump
28		DHW recirculation pump
29		Shunt pump
40		Power supply, 120 VAC, 60 Hz
41		Burner (burner stage 1)
52	A1	Motorized isolation valve
52	M2/M3	Mixing valve actuator circuit 2 or 3
90		Burner (burner stage 2/mod.)
143/146		External connections (see page 39)

System version 6 (cont.)

Coding must be set on **every** Vitotronic 100, GC1.

Vitotronic 100, GC1

Required coding	
01: 2	Multi-boiler system with cascade control via LON BUS
02: 2	Modulating burner operation*1
03: 1	Only with Vitotronic 100, GC1 for low temperature boiler: Oil fired operation (non-reversible)
07: 2 07: 3 07: 4	Setting the boiler number on the Vitotronic of boiler 2 boiler 3 boiler 4
0d: 0	Only with Vitotronic 100, GC1 for Vitocrossal 300: without Therm-Control
77: 2 77: 3 77: 4	Setting the LON participant number on the Vitotronic of boiler 2 boiler 3 boiler 4
Automatic changeover	
4A 1	Only with Vitotronic 100, GC1 for low temperature boiler: Connecting the T1 temperature sensor to plug 17 A
4b: 1	Only with Vitotronic 100, GC1 for low temperature boiler: Connecting the T2 temperature sensor to plug 17 B

Vitotronic 300-K, MW1S

Required coding	
00: 3, 00: 4, 00: 7, or 00: 8	Without system circuit A1*1
35: 1 35: 2 35: 3	Vitotronic 300-K, MW1S with one Vitotronic 100, GC1 two Vitotronic 100, GC1 three Vitotronic 100, GC1
39: 1 to 39: 4	Setting up Vitocrossal 300 as permanent lead boiler
3C: 1	Condensing strategy 1

System version 6 (cont.)

Possible applications
The Vitocrossal 300 (lead boiler) and the Vitorond 200 (lag boiler) are operated via a Viessmann control system with outoor reset logic, modulating boiler water temperature, and load-dependent sequential control – two-stage or modulating burners are controlled.

Vitocrossal 300 is equipped with two return connections. The heating circuits with the higher return temperature are connected to the upper return connection, and those with lower return temperatures to the lower return connection. Please note: Connect at least 15% of the rated output to the lower return connection. The return temperature control is available as accessory or must be provided on site.

Return temperature control for Vitorond can be achieved using the shunt pump and by closing the isolation valve.

Temperature sensor T1 controls the isolation valve. Temperature sensor T2 switches the shunt pump.

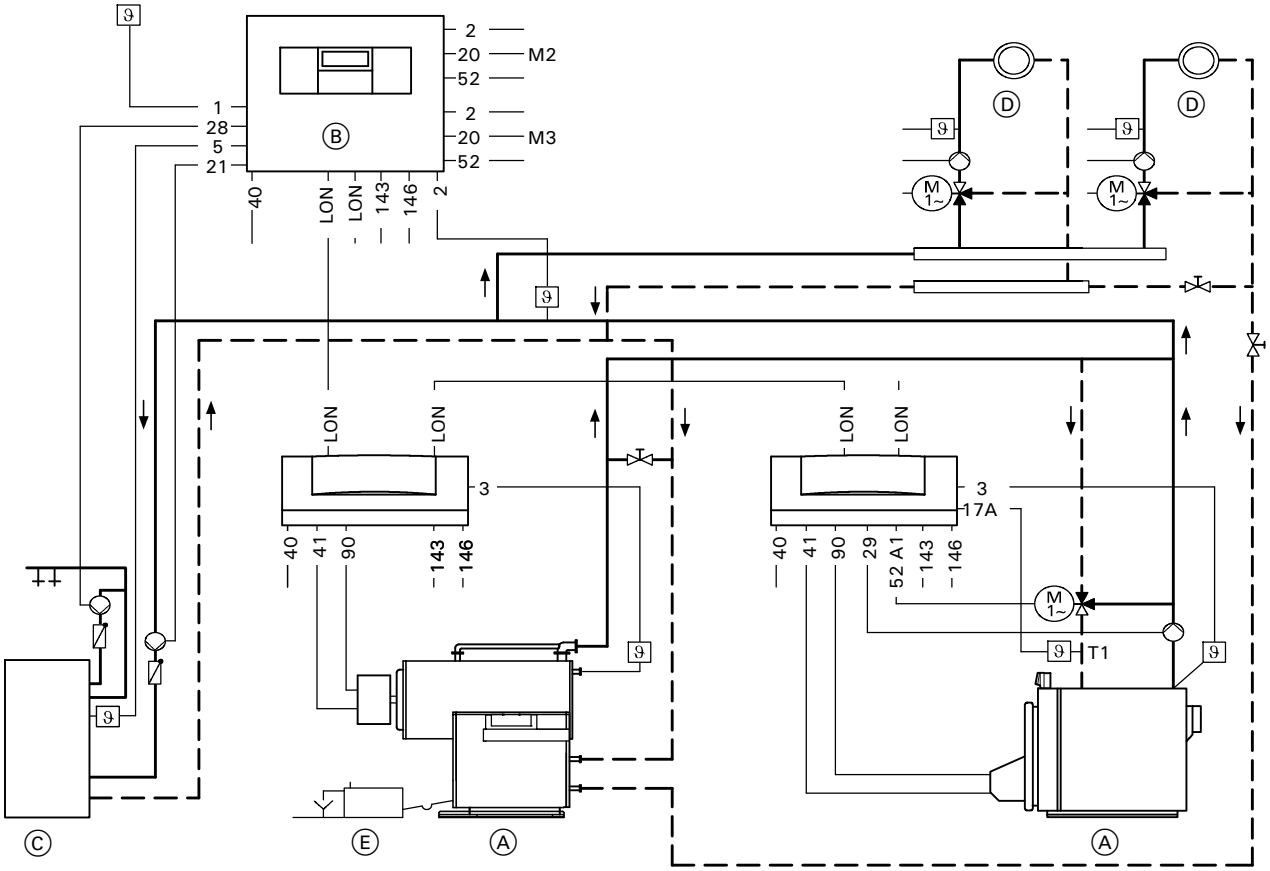
Due to the LON-BUS communication between controls, a boiler supply temperature is automatically set.
This temperature is based on the highest required mixing valve circuit temperature plus adjustable differential.

IMPORTANT

The connection diagram is only a recommendation and needs to be verified for completeness and functionality at the installation site. Single-phase and three-phase pumps must be connected with field supplied motor contactors and/or motor starters.

System version 7

Three-way mixing valve, several heating circuits and one low temperature heating circuit
Vitocrossal 300
Vitorond 200, 125KW- 500 KW



Ⓐ Boiler with Vitotronic 100, GC1
Ⓑ Vitotronic 300-K, MW1S
Ⓒ DHW tank
Ⓓ Mixing valve circuit
Ⓔ Neutralizing system

Plug

1	Outdoor temperature sensor
2	Supply temperature sensor common heating supply
2 M2/M3	Supply temperature sensor mixing valve circuit 2 or 3
3	Boiler temperature sensor
5	DHW tank temperature sensor
17 A	Temperature sensor T1
20 M2/M3	Heating circuit pump mixing valve circuit 2 or 3
21	DHW pump
28	DHW recirculation pump
29	Boiler circuit pump
40	Power supply,120 VAC, 60 Hz
41	Burner (burner stage 1)
52 A1	Three-way mixing valve
52 M2/M3	Mixing valve actuator circuit 2 or 3
90	Burner (burner stage 2/mod.)
143/146	External connections (see page 39)

System version 7 (cont.)

Coding must be set on **every** Vitotronic 100, GC1.

Vitotronic 100, GC1

Required coding	
01: 2	Multi-boiler system with cascade control via LON BUS
02: 2	Modulating burner operation*1
03 : 1	Only with Vitotronic 100, GC1 for low temperature boiler: Oil fired operation (non-reversible)
	Setting the boiler number on the Vitotronic of
07: 2	boiler 2
07: 3	boiler 3
07: 4	boiler 4
0C: 1	Only with Vitotronic 100, GC1 for low temperature boiler: Constant return temperature control
0d: 0	Only with Vitotronic 100, GC1 for Vitocrossal 300: without Therm-Control
4d: 2	Only with Vitotronic 100, GC1 for low temperature boiler: Boiler circuit pump on plug 29
	Setting the LON participant number on the Vitotronic of
77 2	boiler 2
77: 3	boiler 3
77: 4	boiler 4
Automatic changeover	
4A 1	Only with Vitotronic 100, GC1 for low temperature boiler: Connecting the T1 temperature sensor to plug 17 A

*1

If required.

System version 7 (cont.)

Vitotronic 300-K, MW1S

Required coding	
00: 3, 00: 4, 00: 7, or 00: 8	Without system circuit A1*1
35: 1 35: 2 35: 3	Vitotronic 300-K, MW1S with one Vitotronic 100, GC1 two Vitotronic 100, GC1 three Vitotronic 100, GC1
39: 1 to 39: 4	Setting up Vitocrossal 300 as permanent lead boiler
3b: 3	Autonomous series connection with supply temperature sensor

*1
If required.

Possible applications
For heating circuits with temperature differentials ≥20 °C / 68 °F

The Vitocrossal 300 (lead boiler) and the next Vitorond (lag boiler) are operated via a Viessmann control system with outdoor reset logic, modulating boiler water temperature, and load-dependent sequential control – two-stage or modulating burners are controlled.

Vitocrossal 300 is equipped with two return connections. The heating circuits with the higher return temperature are connected to the upper return connection, and those with lower return temperatures to the lower return connection.
Please note: Connect at least 15 % of the rated output to the lower return connection.

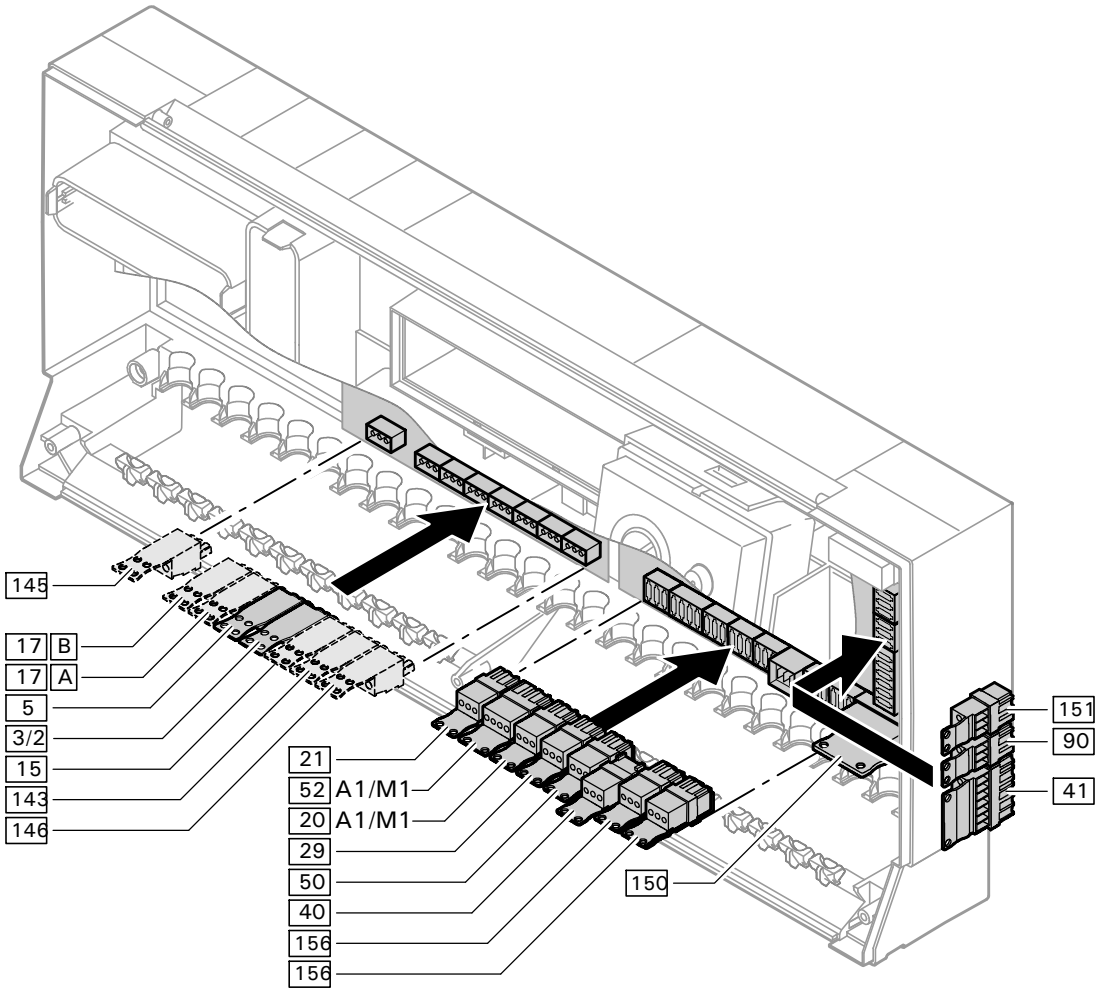
Temperature sensor T1 senses the return temperature.
The boiler control unit regulates the three-way mixing valve to ensure that the system never falls below the minimum return temperature.

Due to the LON-BUS communication between controls, a boiler supply temperature is automatically set.
This temperature is based on the highest required mixing valve circuit temperature plus adjustable differential.

IMPORTANT

The connection diagram is only a recommendation and needs to be verified for completeness and functionality at the installation site. Single-phase and three-phase pumps must be connected with field supplied motor contactors and/or motor starters.

Summary of electrical connections



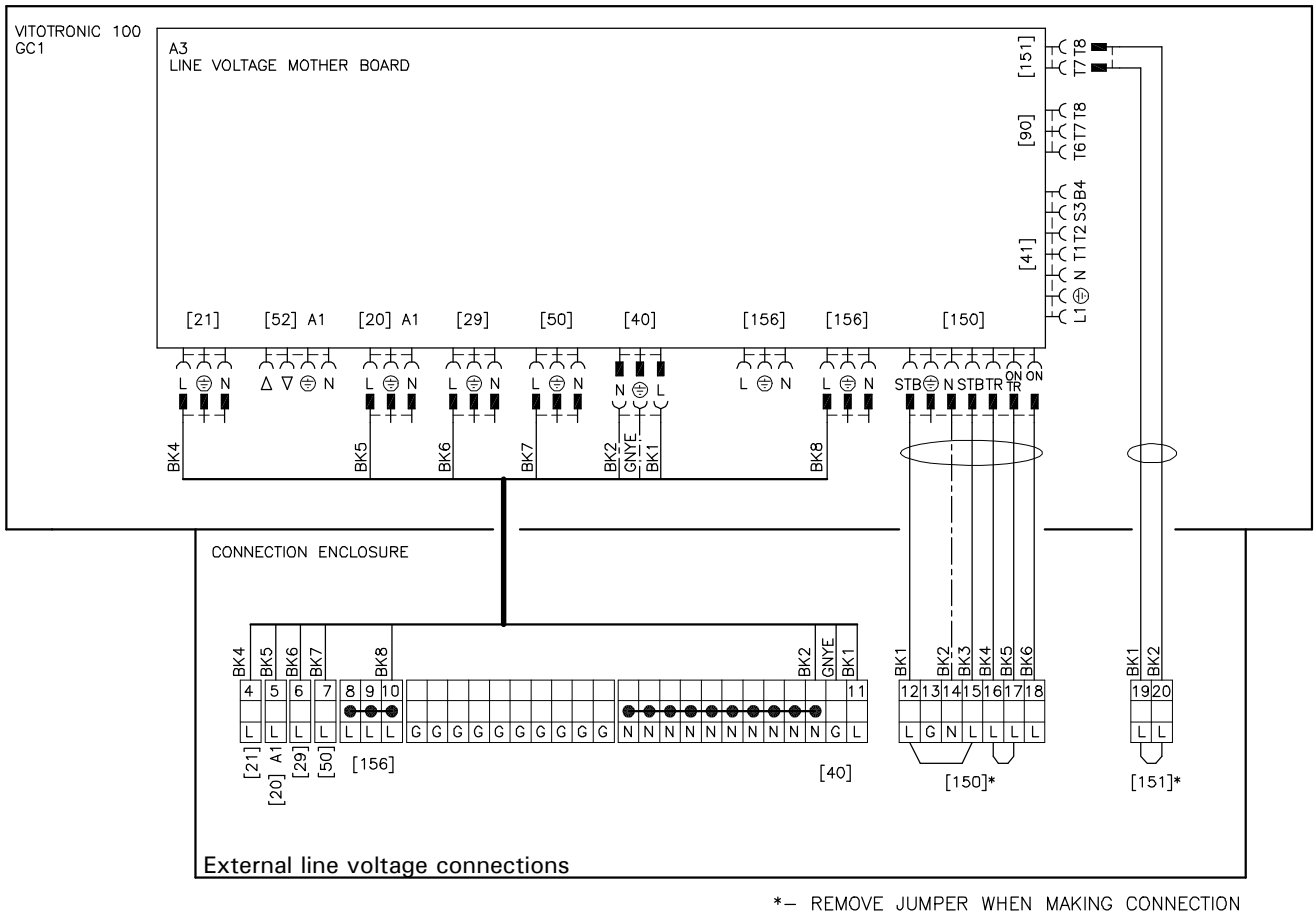
Low voltage connections (motherboard)

- 3 Boiler temperature sensor
- 5 No function
- 15 Flue gas temperature sensor (accessory)
- 17 A Therm-Control temperature sensor
  or
  return temperature sensor T1 (accessory)
- 17 B Return temperature sensor T2 (accessory)
- 143 External connection
- 145 KM BUS participant, e.g. plug-in adaptor for external safety equipment
- 146 External connection (Page 39)

Line voltage connections (motherboard)

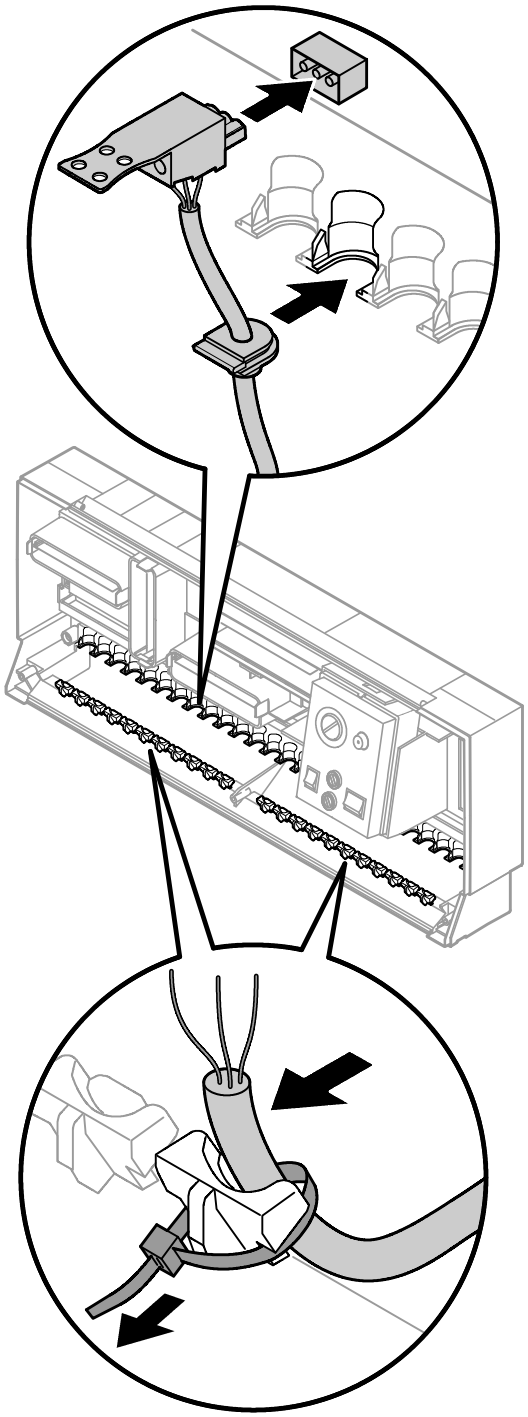
- 20 A1 DHW recirculation pump –
  or
  switched output
- 21 No function
- 29 Shunt pump (on site)
  or
  boiler circuit pump (on site)
- 40 Power connection
- 41 Burner (burner stage 1)
- 50 Central fault message
- 52 A1 Isolation valve
  or
  actuator for three-way mixing valve for return temperature control
- 90 Burner (burner stage 2/mod.)
- 150 External connections, e.g. supplementary safety equipment
- 151 Safety circuit, potential free
- 156 Power supply for accessories

Summary of electrical connections (cont.)



Inserting cables and applying strain relief

Run the cables from the connection enclosure into the control unit.
Apply strain relief to cables (see below).



Cables with moulded strain relief clamp

Connect cable and strain relief clamp.

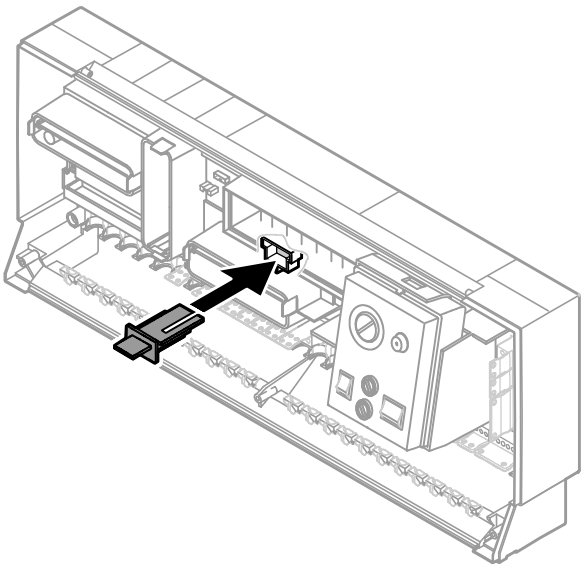
OR

Fasten cable to the cable lead with cable tie.

Inserting the boiler coding card

Only use the boiler coding card included with the boiler.

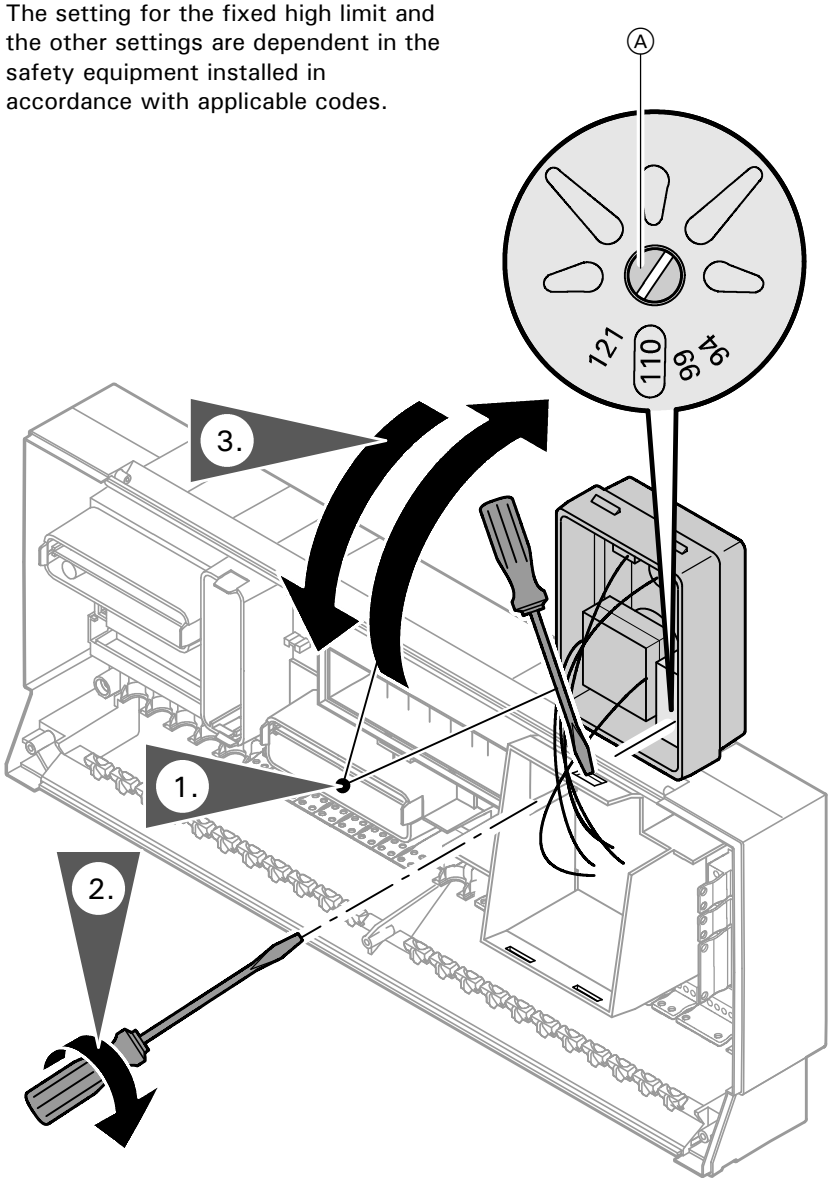
Boiler	Coding card	Part no.
Vitocrossal 300, type CT3	1040	7820 144
Vitorond 200	1020	7820 142



Insert the boiler coding card through the cut-out in the cover into slot X7.

Setting of the fixed high limit (if required)

Settings on the control unit
The setting for the fixed high limit and the other settings are dependent in the safety equipment installed in accordance with applicable codes.



The fixed high limit is supplied with a factory setting.

- **On Vitotronic 100, GC1 for Vitorond 200 of 120 °C/248 °F**

  Adjustment to 110 °C/230 °F or 99 °C/210 °F

- **On Vitotronic 100, GC1 for Vitocrossal 300 of 99 °C/210 °F**
  - **No adjustment**

⚠ **Disconnect power to control and burner!**

1. Unclip the fuse box and swing upwards.

2. Turn the slotted screw on the rear of the fixed high limit until the slot points to 110 or 99 °C / 230 or 210 °F (once adjusted, the fixed high limit **cannot** be reset to 120 °C/ 248 °F).

3. Re-fit the fuse box.

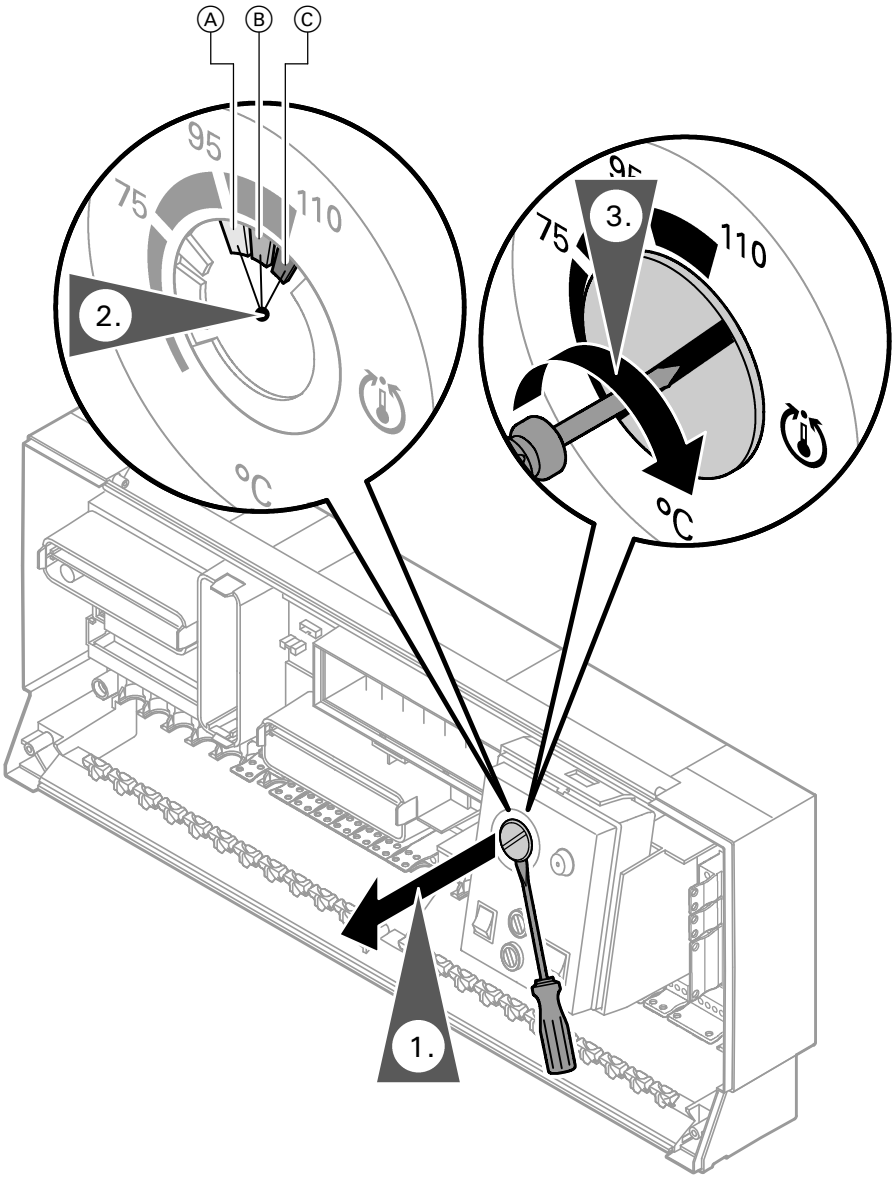
⚠ WARNING

If adjusted to 99 °C / 210 °F, do not set the adjustable high limit above 75 °C / 167 °F.

	Non-condensing boilers ˚C / ˚F		Condensing boilers ˚C / ˚F
Fixed high limit	120 / 248	99 / 210	99 / 212
Adjustable high limit	110 / 230	87 / 189	87 / 189
Coding for the electronic maximum temperature limiter of Vitotronic 100; GC1 set coding 06 to	105 / 221	85 / 185	85 / 185
Max. temperature of the builidng automation system control unit provided on site	100 / 212	80 / 176	80 / 176

Setting of the adjustable high limit (if required)

The adjustable high limit is supplied with a factory setting of 95 °C/ 203 °F .



Adjustment to 100 or 110 °C / 212 or 230 °F

1. Disconnect power to control and burner.
2. Using a suitable screwdriver, lever out and remove the selector knob "⏲" behind the hinged cover.
3. Using a pair of pointed pliers, break off the cams identified by the shaded areas in the diagram from the stop dial.

Ⓐ	75 to 95 °C 167 to 203 °F
Ⓐ, Ⓑ	75 to 100 °C 167 to 212 °F
Ⓐ, Ⓑ, Ⓒ	75 to 110 °C 167 to 230 °F

4. Fit the selector knob "⏲" so that the marking is in the centre of the selected range.

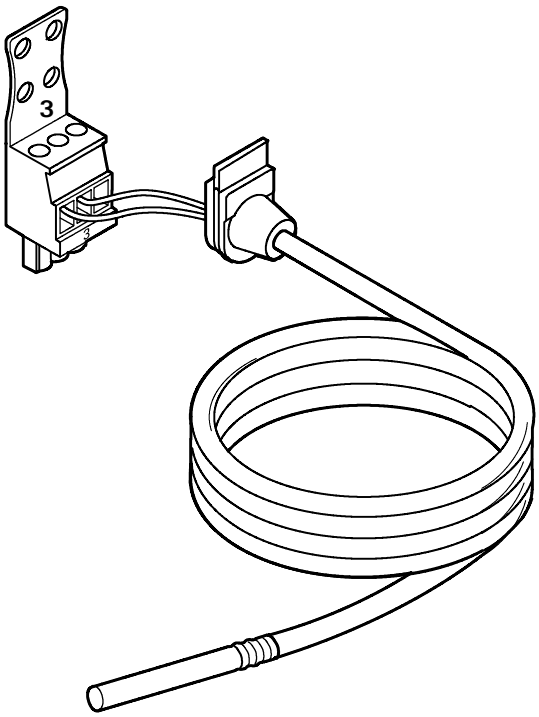
IMPORTANT

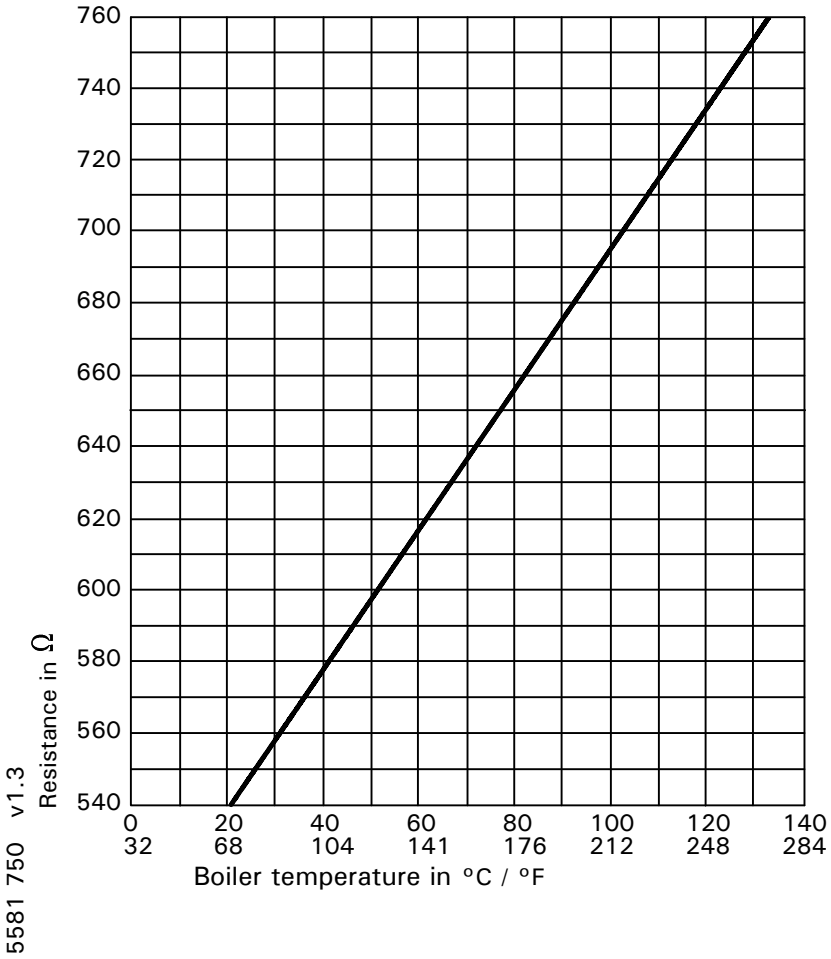
Note the setting of coding address "06"!

⚠ WARNING

If the system is operated in conjunction with a domestic hot water tank, ensure that the maximum permissible domestic hot water temperature is not exceeded. If necessary, install a suitable safety device for this purpose.

Connection of the boiler temperature sensor





5581 750 v1.3

The sensor measures the boiler water temperature of the boiler.

The boiler temperature sensor is installed at the same time as the boiler insulation.

Check the sensor

1. Disconnect plug [3] in the terminal compartment of the boiler control.

2. Measure resistance of sensor at terminals "1" and "2" of the plug.

Boiler water temperature in °C / °F	Resistance in Ω
40 / 104	578
50 / 122	597
60 / 140	616

3. Compare the value measured with the current temperature. If the value differs significantly, check installation and, if necessary, replace sensor.

Technical data

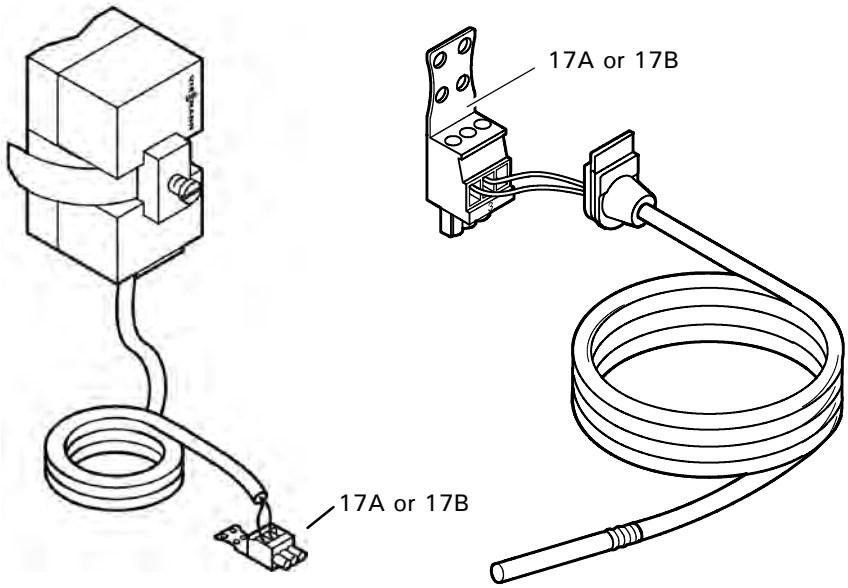
Degree of protection: IP 32
Ambient temperature
- during operation:
  0 to + 130 °C
  32 to + 266 °F
- during storage and transport:
  -20 to + 70 °C
  - 4 to + 158 °F

Electrical connection

The sensors are ready to plug in. Insert the boiler temperature sensor in socket "3" of the boiler control.

Connection of the return temperature sensor

Strap-on temperature sensor and immersion temperature sensor



For measuring the supply and return temperature.

Electrical connection
The sensor is inserted in socket "17A" or "17B" on the control unit.

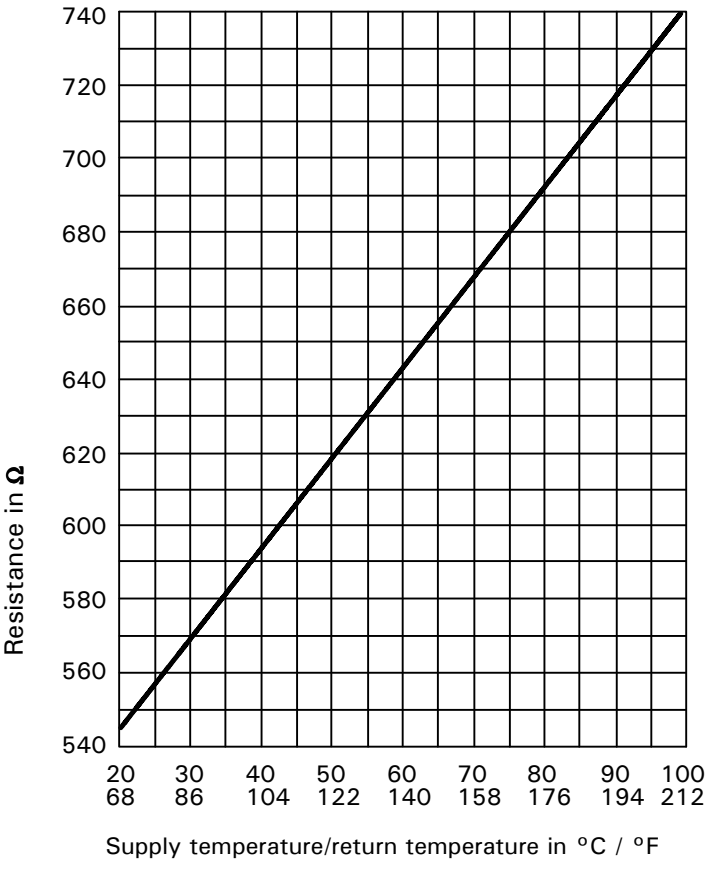
Check the sensor

1. Disconnect plug 17 A or 17 B in the terminal compartment.
2. Measure resistance of sensor at terminals "1" and "2" of the plug.

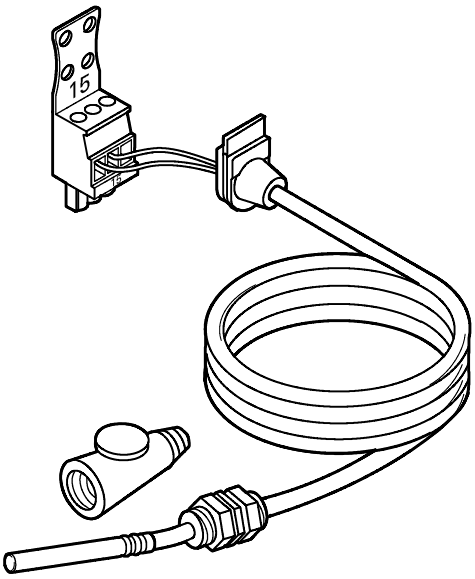
Flow/return temperature in °C / °F	Resistance in Ω
30 / 86	569
40 / 104	592
60 / 140	643

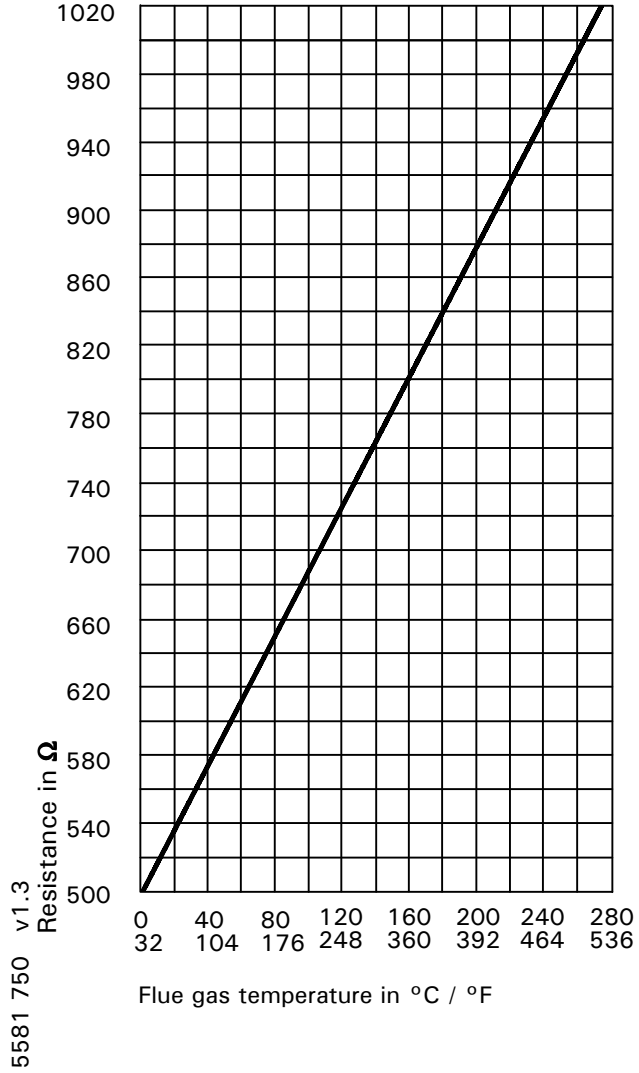
3. Compare the value measured with the current temperature. If the value differs significantly, check installation and, if necessary, replace sensor.

Technical data
Degree of protection: IP 32
Ambient temperature
- during operation:
  0 to + 100 °C
  32 to + 212 °F
- during storage and transport:
  –20 to + 70 °C
  - 4 to + 158 °F



Connection of the flue gas temperature sensor





The sensor measures the flue gas temperature and monitors the selected limit value.

Electrical connection
The sensor is inserted in socket "15" on the control unit.

Check flue gas temperature sensor

1. Disconnect plug 15 in the terminal compartment.

2. Measure resistance of sensor at terminals "1" and "2" of the plug.

Flue gas temperature in °C / °F	Resistance in Ω
80 / 176	650
160 / 320	800
200 / 392	880

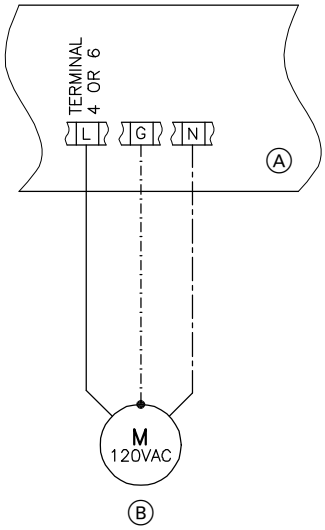
3. Compare the value measured with the current temperature. If the value differs significantly, check installation and, if necessary, replace sensor.

Technical data
Degree of protection: IP 60
Ambient temperature
- during operation:
  0 to + 600 °C
  32 to + 1112 °F
- during storage and transport:
  –20 to + 70 °C
  - 4 to + 158 °F

Connection of the pumps

Available pump connections

29 Shunt pump, boiler circuit pump
Terminals 6 - L, - G, - N in line voltage connection enclosure.



Ⓐ Connection enclosure on boiler control

Ⓑ 120 VAC DHW tank pump or shunt pump

Install pumps; see manufacturer's instructions.

240 VAC or 3 PH pumps
Please note:

Use contactor and/or motor starter to power pump.
For activating the contactor:
Rated current: max. 2 FLA
Recommended connection wire size: AWG 14

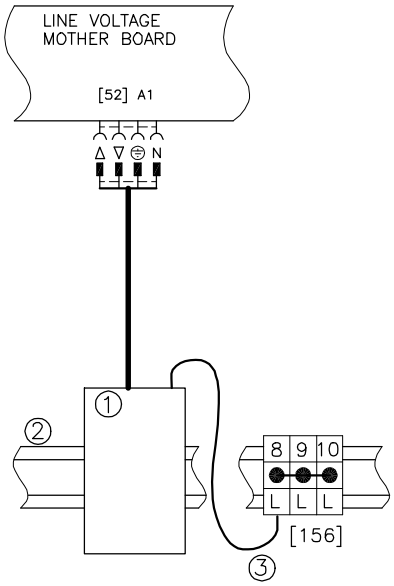
Please ensure that all connections and wire size comply with local and national codes.

1. Select the contactor and the connecting wire in accordance with the rating of the pump that is to be connected.

2. Connect pump and power supply to the contactor.

3. Connect contactor coil to the corresponding terminals.

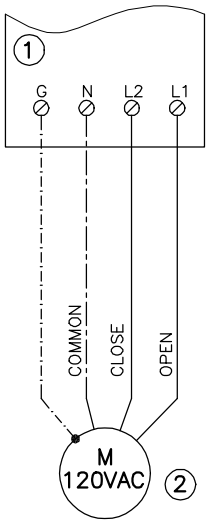
Connection of boiler return mixing valve or isolation / modulating valve actuator



① 120V or 24V Valve Adaptor

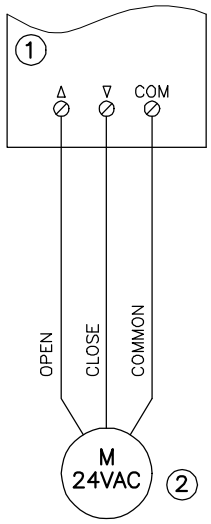
② DIN rail in connection enclosure

③ [156] Terminals



① 120V Valve Adaptor

② 120V Valve actuator



① 24V Valve Adaptor

② 24V Valve actuator

120V Valve Adaptor
Rated voltage: 120 VAC
Rated current: max. 0.1 FLA
Recommended connection
wire size: AWG 14
PN: 7134 560

24V Valve Adaptor
Rated voltage: 24 VAC
Rated current: max. 0.15 FLA
Recommended connection
wire size: AWG 14
PN: 7134 559

Operating time:
5 to 199 sec. selected via coding address “40”.

1. Disconnect power to control.

2. Install 120V or 24V Valve Adaptor on DIN rail inside connection enclosure.

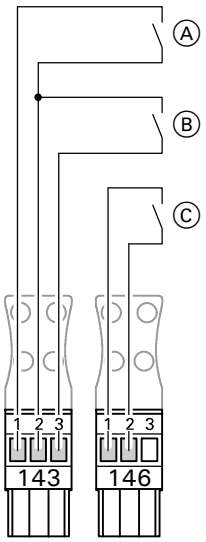
3. Insert the plug [52] into socket [52] on the control.

4. Fasten cable with tie (see page 30).

5. Connect black wire of the adaptor to connection [156] on the DIN rail
- Terminal 8,9 or 10.

6. Connect valve actuator wires to the adaptor terminals as shown on figures.

Connection of external controls



Ⓐ Boiler disable

Ⓑ Activate boiler as last in the boiler sequence

Ⓒ External changeover between staged/modulating burner

Ⓐ

Boiler disable
Connect dry contact at terminals "1" and "2" of the plug 143.

Contact closed:
The boiler burner is disabled.
It is taken out of the boiler sequence, i.e. isolation valve/return valve are closed. The shunt pump/boiler circuit pump are switched off. The heat must be supplied by other boilers.

⚠ ***Safety instruction!***
If all boilers are disabled or no other boilers are ready for operation, there is ***no*** *frost protection of the heating sysytem.*

Contact open:
The boiler is put back in the current boiler sequence.

Ⓑ

Activate boiler as last in the boiler sequence.
Connect dry contact at terminals "2" and "3" of the plug 143.

The boiler is activated as last in the boiler sequence. The other boiler take over the supply of heat for the heating system. If the output of the other boilers is not sufficient, the boiler is activated.

Contact open:
The boiler is put back in the current boiler sequence.

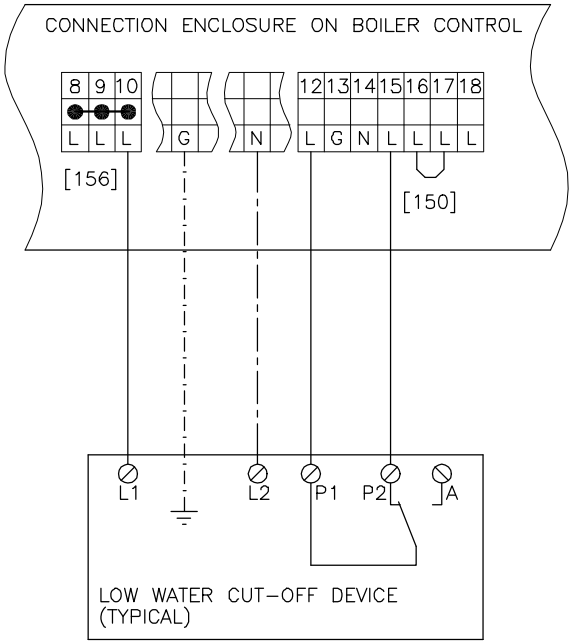
Ⓒ

External changeover between staged/modulating burner
Connect dry contact to terminals "1" and "2" of the plug 146.

Contact open: Modulating operation
Contact closed: Two-stage operation
The burner type must be set to modulating in coding 1 (coding "02: 2").

Please note:
When the burner type is scanned, "modulating" continues to be displayed after external changeover (the display in not changed).

Connection of the low water cut-off device

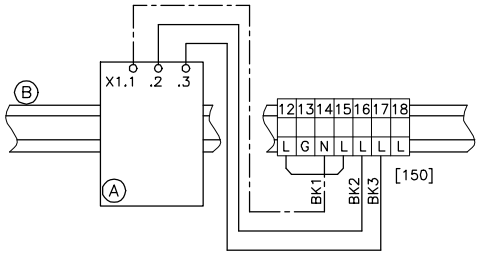


1. Disconnect power to control and burner
2. Remove jumper between terminals 12 and 15
3. Make connection as shown in diagram.

156 Power supply for accessories, 120 VAC

150 Connection for external safety equipment, 120 VAC

Connection of combustion air devices



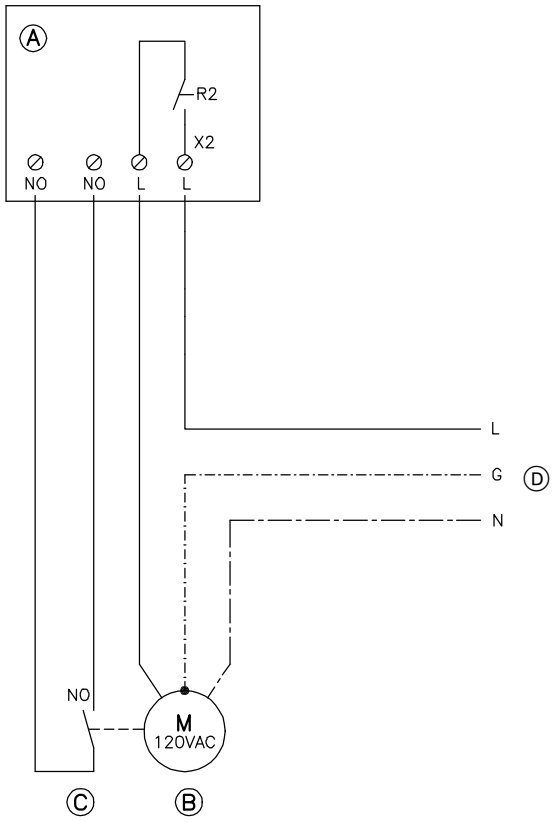
Connection of the Combustion Air Device Adaptor

1. Disconnect power to control and burners.
2. Install Combustion Air Device Adaptor,
PN: 7134 563
on DIN Rail inside connection enclosure (refer to installation manual of Combustion Air Device Adaptor).
3. Remove jumper between terminals 16 and 17.
4. Make connection as shown in the diagram.

IMPORTANT

Wire BK2 must be connected to terminal “16” and BK3 to terminal “17” - DO NOT reverse.

Ⓐ Combustion Air Device Adaptor
Ⓑ DIN Rail in connection enclosure



Connection of the combustion air blower to adaptor

Rated voltage: 120 VAC
Rating current: max 5 FLA
Recommended connection wire size: AWG 14

Assure that combustion air blower device is suitable for this application.

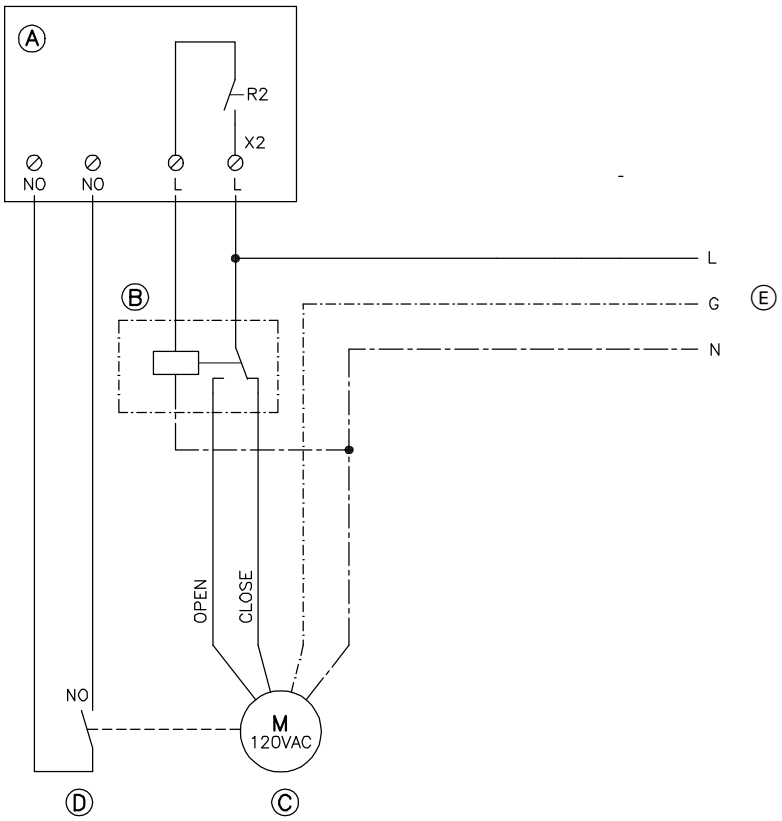
For detailed instruction on adaptor installation please refer to the adaptor’s installation manual.

1. Make connection as shown in the diagram at left.

Ⓐ Combustion Air Device Adaptor in connection enclosure
Ⓑ Combustion air blower motor
Ⓒ Proving switch - “normally open” rated for 120 VAC.
Ⓓ Power supply, 120 VAC

⚠ ***Safety instruction!***
Provide disconnect means and overcurrent protection as required by local codes.

Connection of combustion air devices (contd.)



Connection of the combustion air damper

See damper manual for correct installation.

Assure that the combustion air damper is suitable for this application.

1. Disconnect power to control and burner.

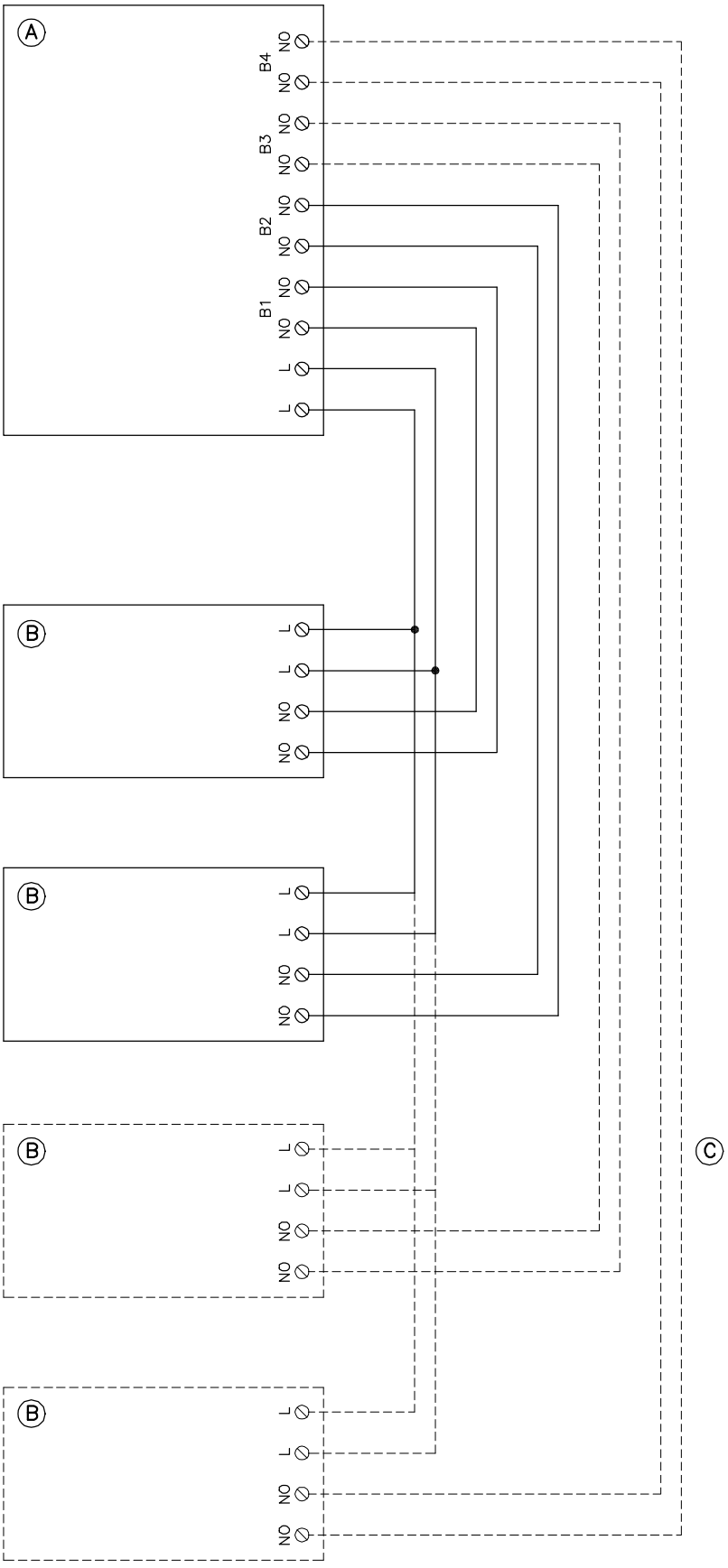
2. Make connection as shown in the diagram.

Ⓐ Combustion Air Device Adaptor in connection enclosure
Ⓑ Relay 120 VAC coil - field supplied
Ⓒ Combustion air damper
Ⓓ End switch rated for 120 VAC wired to “normally open” terminal on device adaptor board
Ⓔ Power supply, 120 VAC

⚠ ***Safety instruction!***
Provide disconnect means and overcurrent protection as required by local codes.

Note:
Spring return air dampers do not require field supplied relay.

Connection of single combustion air devices on mulitple boiler system



If a single combustion air device is required for a multiple boiler system, a Common Combustion Air Interface must be installed.

Rated voltage: 120 VAC
Rating current: max 5 FLA
Recommended connection wire size: AWG 14

1. Install Combustion Air Device Adaptor on each boiler.
PN: 7134 563

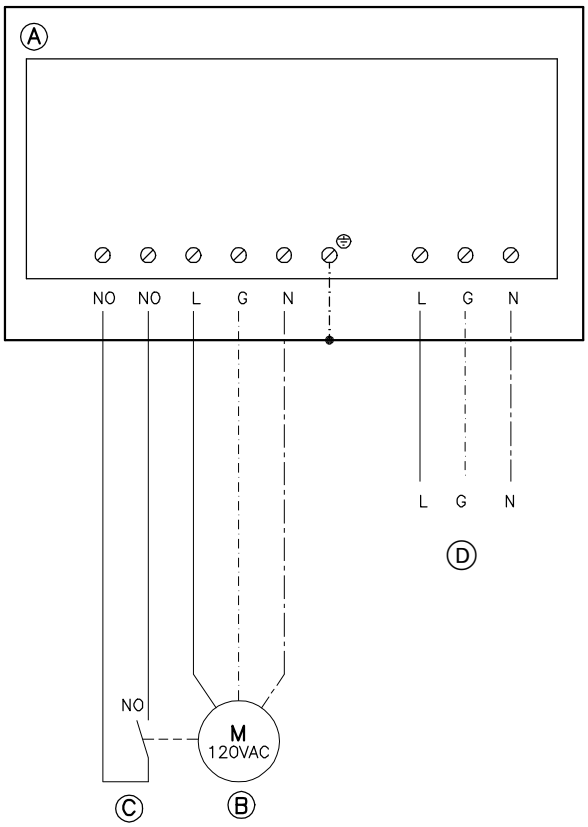
2. Install Common Combustion Air Device Interface,
PN: 7134 604
as per supplied manual.

3. Make connection as shown in the diagram at left.

Ⓐ Common Combustion Air Device Interface (wall mount)
Ⓑ Combustion Air Device Adaptor in connection enclosure on each boiler
Ⓒ Interconnecting wiring (field supplied and connected)

Refer to Istallation and Operating Instructions of Common Combustion Air Device Interface for details.

Connection of single combustion air devices on mulitple boiler system



Connection of the combustion air blower

Ⓐ Common Combustion Air Device Interface
Ⓑ Combustion air device motor 120VAC, 5 FLA max.
Ⓒ Proving switch rated for 120 VAC
Ⓓ Power supply, 120 VAC

⚠***Safety instruction!***
Provide disconnect means and overcurrent protection as required by local codes.

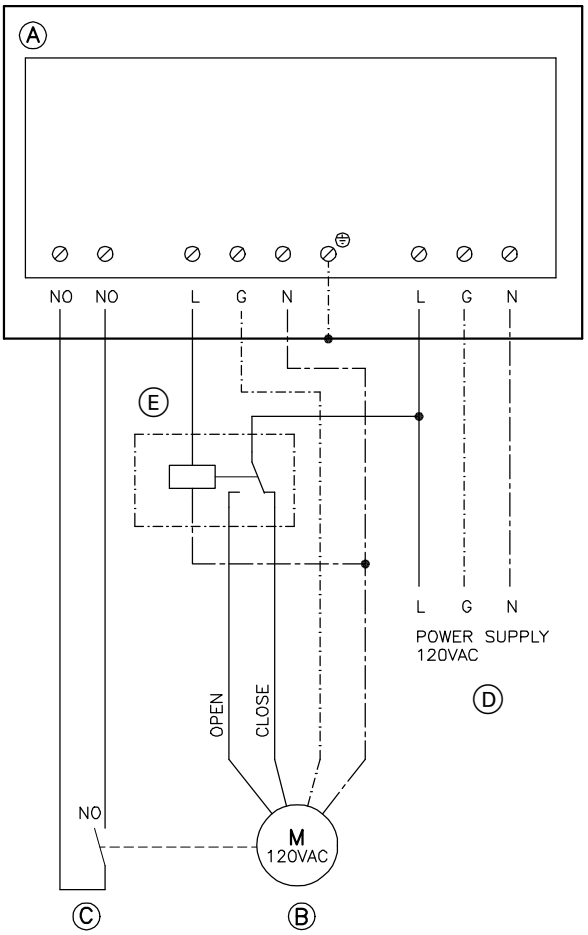
See blower manual for current rating to correctly select the fuse.

See Common Combustion Air Device Interface manual for Installation and Operating details.

1. Disconnect power to control and burner.

2. Make the connections as shown in the diagram.

Connection of single combustion air damper



Connection of the combustion air damper

Ⓐ Common Combustion Air Device Interface
Ⓑ Combustion air device motor 120VAC, 5 FLA max.
Ⓒ Proving switch rated for 120 VAC
Ⓓ Power supply, 120 VAC
Ⓔ Relay, field supplied

⚠ ***Safety instruction!***
Provide disconnect means and overcurrent protection as required by local codes.

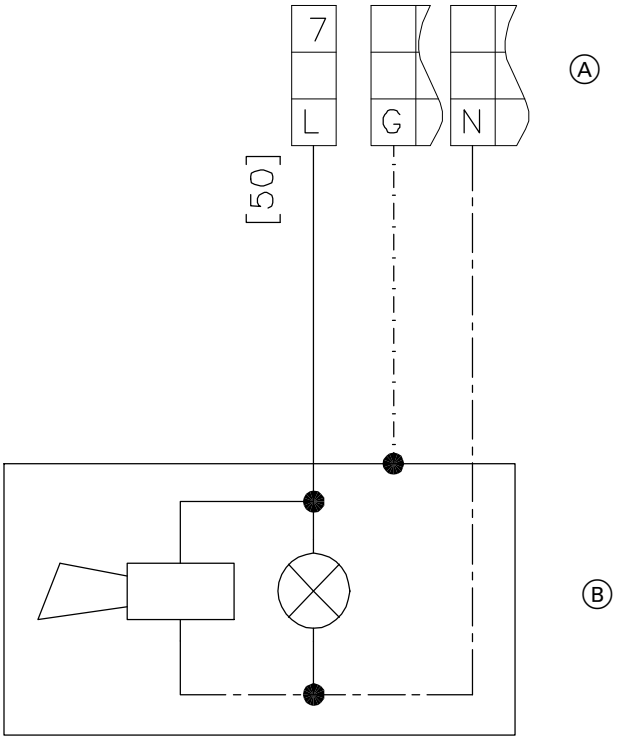
See damper manual for current rating to correctly select the fuse.

See Common Combustion Air Device Interface manual for Installation and Operating details.

1. Disconnect power to control and burner.

2. Make the connections as shown in the diagram.

Connection of the compiled failure alarm



Rated voltage: *120 VAC 60 Hz*
Rated current: *max. 2 FLA*
Recommended connection wire size: *AWG 14*

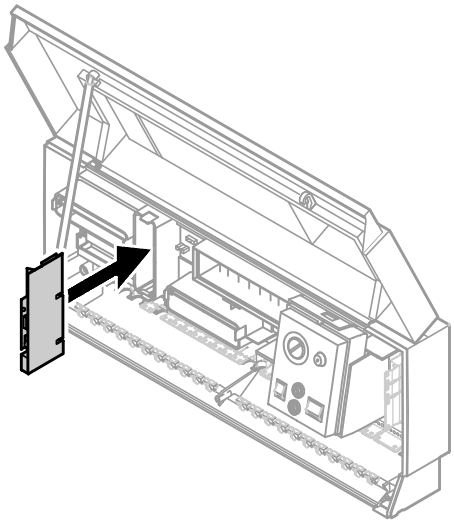
1. Disconnect power to control and burner.

2. Connect the compiled failure alarm as shown in the diagram.

Ⓐ Connect terminal strip in connection enclosure of boiler control

Ⓑ Visual and/or audible alarm device (120 VAC)

Plugging in the LON communication module



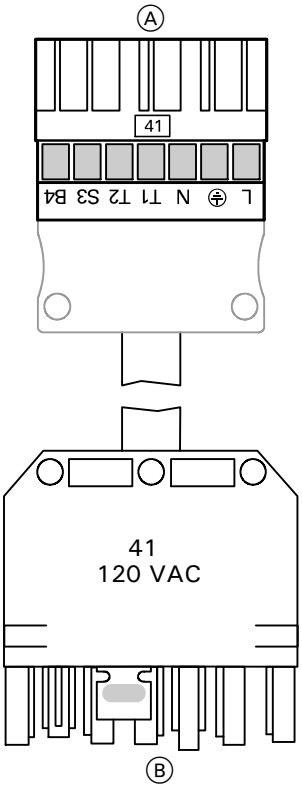
Plug in the LON communication module in accordance with the illustration in the control unit.

Making the LON connection

See page 69.

Burner connection, burner control wiring

For burners with plug-in connection



The burner cables are included in the standard delivery of the Vitotronic.
Connect the burner in accordance with applicable codes.

Ⓐ To boiler control unit
Ⓑ To burner

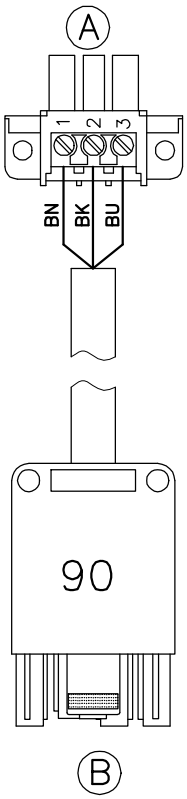
Terminal codes

L1 Phase via fixed high limit to the burner
⏚ Ground connection
N Neutral connection to the burner
T1,T2 Control circuit
S3 Connection for burner fault indicator
B4 Connection for burner hours counter

1. Disconnect power to burner and boiler control.

2. Connect plugs 41 and plug 90 to respective counter plugs in boiler control unit.

3. Connect the 7-pole plug 41 and the 3-pole plug 90 to the burner.



Ⓐ To plug-in connection in connection enclosure
Ⓑ To burner

Terminal codes

1,2,3 Control circuit "2nd stage burner or modulation controller" (via two-point controller with 2-stage operation; via three-point controller with modulating operation)
1 From burner
2 Modulating down
3 Modulating up/2nd stage ON

Colour codes as applicable

BK Black
BN Brown
BU Blue

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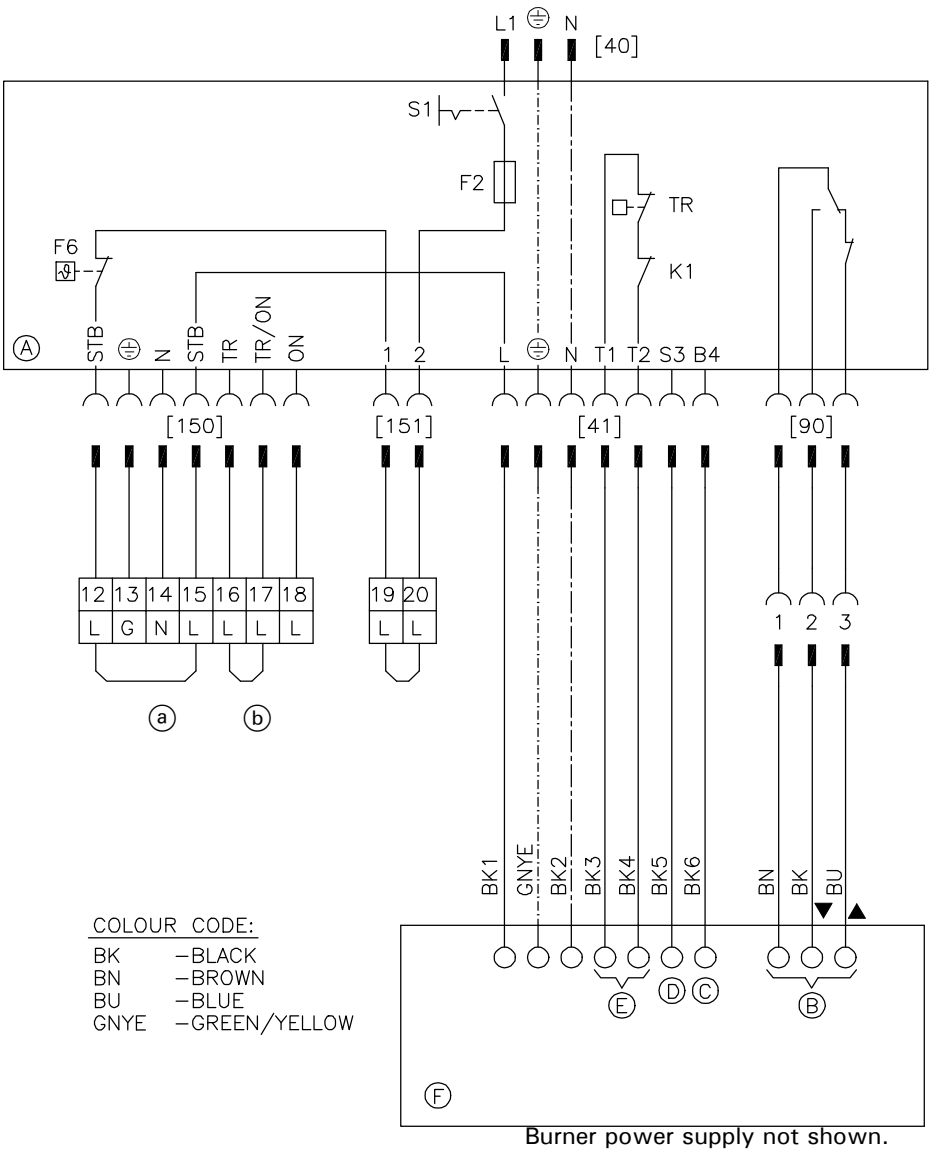
Burner connection, burner control wiring (continued)

⚠ Caution!

This is a generic connection drawing only! Follow the burner manufacturer's connection drawings for Viessmann controls.



Write the terminal numbers or markings on the drawing for future reference.

Burner power supply not shown.

Ⓐ Control unit
(Legend: see wiring diagram)
Ⓑ 2nd stage or modulating *1
Ⓒ Hours counter, stage 1 *1
Ⓓ Burner fault indicator *1
Ⓔ Control circuit, stage 1/ basic load *1
Ⓕ Burner

40 Power supply connection of control unit 120 VAC
41 Burner, 1st stage
90 Burner, 2nd stage

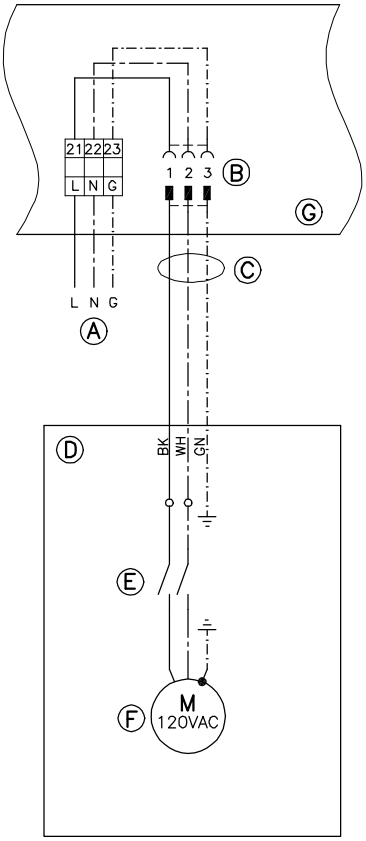
150 Plugs for external equipment
ⓐ External safety devices (remove jumper when connecting)
ⓑ External controlled switch-off (remove jumper when connecting)
151 Safety circuit. Emergency shut-off

*1 Refer to burner manufacturer's instruction on detailed connections for Viessmann controls.

Burner connection, burner control wiring (continued)

Burner motor power supply connection

For burners with 120 VAC, 1PH power supply and soft cable connection.



Ⓐ Burner motor power supply 120 VAC, 1PH
Ⓑ Connection terminals and plug inside connection enclosure
Ⓒ Cable - factory supplied
Ⓓ Burner
Ⓔ Motor starter
Ⓕ Burner motor
Ⓖ Connection enclosure on boiler control

See burner manual for correct fuse and wire gauge sizing, and specific connections for Viessmann controls.

1. Disconnect power to burner and boiler control.

2. Connect 120 VAC power to the terminals 21, 22 and 23 on the DIN rail inside the connection enclosure. Provide fuseable disconnect means according to local codes.

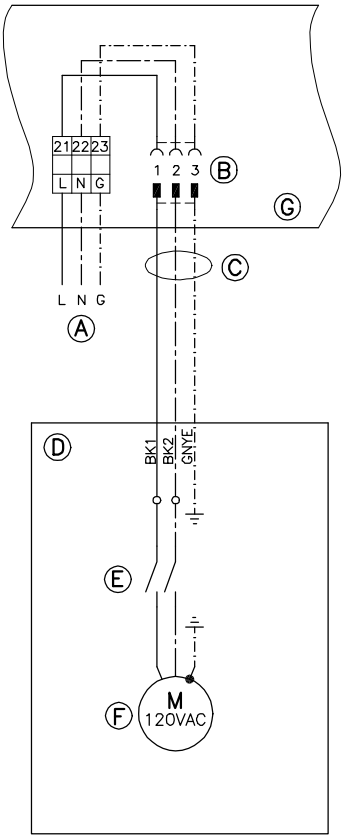
3. Connect supplied power cable to the motor terminals on the burner.

4. Connect cable plug to the socket on the DIN rail in the connection enclosure.

Burner connection, burner control wiring (continued)

Burner motor power supply connection

For burners with 120 VAC, 1PH power supply and connection in conduit.



Ⓐ Burner motor power supply 120 VAC, 1PH
Ⓑ Connection terminals and plug inside connection enclosure
Ⓒ Cable and conduit - factory supplied
Ⓓ Burner
Ⓔ Motor starter
Ⓕ Burner motor
Ⓖ Connection enclosure on boiler control

See burner manual for correct fuse and wire gauge sizing, and specific connections for Viessmann controls.

1. Disconnect power to burner and boiler control.

2. Connect 120 VAC power to the terminals 21, 22 and 23 on the DIN rail inside the connection enclosure. Provide fuseable disconnect means according to local codes.

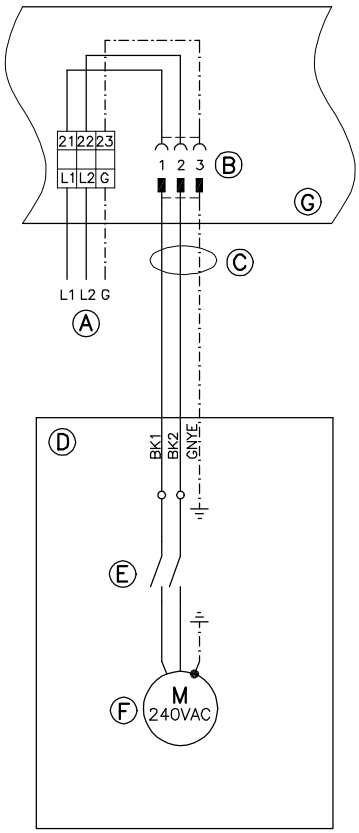
3. Connect supplied power cable to the motor terminals on the burner.

4. Connect cable plug to the socket on the DIN rail in the connection enclosure.

Burner connection, burner control wiring (continued)

Burner motor power supply connection

For burners with 240 VAC, 1PH power supply and connection in conduit.



Ⓐ Burner motor power supply 240 VAC, 1PH
Ⓑ Connection terminals and plug inside connection enclosure
Ⓒ Cable and conduit- factory supplied
Ⓓ Burner
Ⓔ Motor starter
Ⓕ Burner motor
Ⓖ Connection enclosure on boiler control

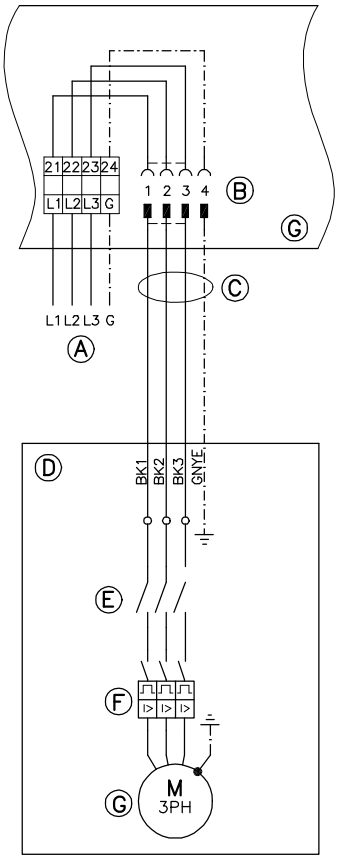
See burner manual for correct fuse and wire gauge sizing, and specific connections for Viessmann controls.

1. Disconnect power to burner and boiler control.
2. Connect 240 VAC power to the terminals 21, 22 and 23 on the DIN rail inside the connection enclosure. Provide fuseable disconnect means according to local codes.
3. Connect supplied power cable to the motor terminals on the burner.
4. Connect cable plug to the socket on the DIN rail in the connection enclosure.

Burner connection, burner control wiring (continued)

Burner motor power supply connection

For burners with 3PH 208, 460 or 575V power supply.



Ⓐ Burner motor power supply 3PH 208, 460 or 575V
Ⓑ Connection terminals and plug inside connection enclosure
Ⓒ Cable and conduit - factory supplied
Ⓓ Burner
Ⓔ Motor starter
Ⓕ Overload
Ⓖ Burner motor
Ⓗ Connection enclosure

See burner manual for correct fuse and wire gauge sizing, and specific connections for Viessmann controls.

1. Disconnect power to burner and boiler control.

2. Connect 3PH power to the terminals 21, 22, 23 and 24 on the DIN rail inside the connection enclosure. Provide fuseable disconnect means according to local codes.

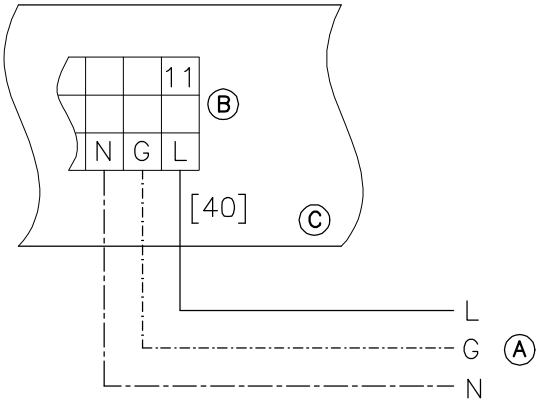
3. Connect supplied power cable to the motor terminals on the burner.

4. Connect cable plug to the socket on the DIN rail in the connection enclosure.

⚠ CAUTION

During commissioning check for correct motor rotation. If motor rotates in opposite direction than indicated on the burner, disconnect power supply and reverse wires BK1 and BK2 on the burner terminals.

Connection to power supply



1. Ensure that the main power supply to the control contains overcurrent protection with a maximum rating of 15 A and 2 pole disconnect.

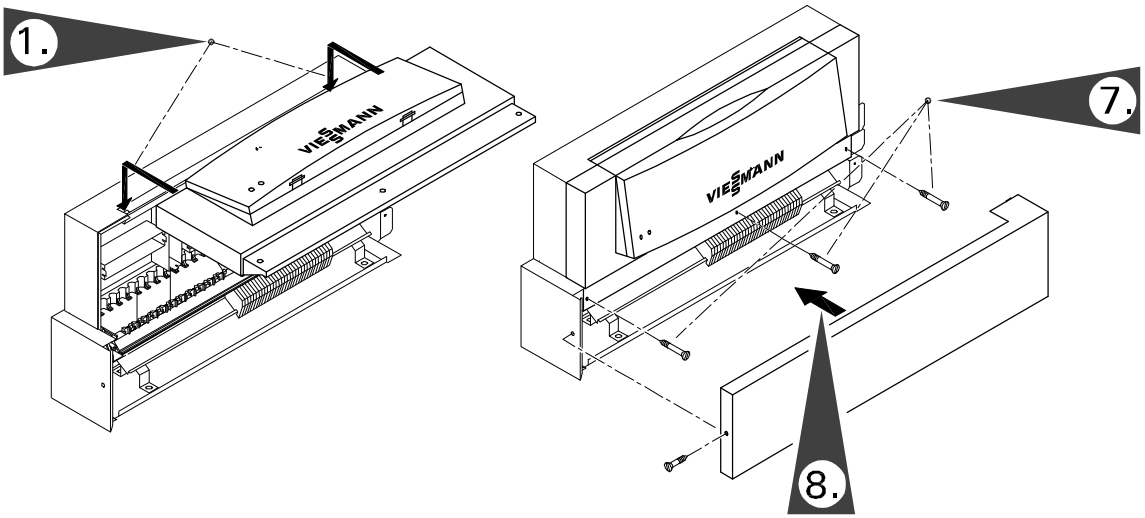
⚠ WARNING
The control must be grounded. Ensure that “L”, “N” and “G” are not interchanged.

L: Line
N: Neutral
G: Ground

2. Connect power supply wire to the Connection [40] terminals “11”, “N” and “G” on the DIN rail inside the connection enclosure.

Ⓐ Power supply 120 VAC, 1 PH . Provide disconnect means and overcurrent protection as per local codes
Ⓑ Terminals [40]
Ⓒ Connection enclosure

Installing the control unit front



1. Position the front part of the housing and clip hinges to counter-parts on main housing.

2. Release the stay bar, open it up and lock in position at point Ⓐ.

3. Insert the flat cable from the Optolink into plug "X20".

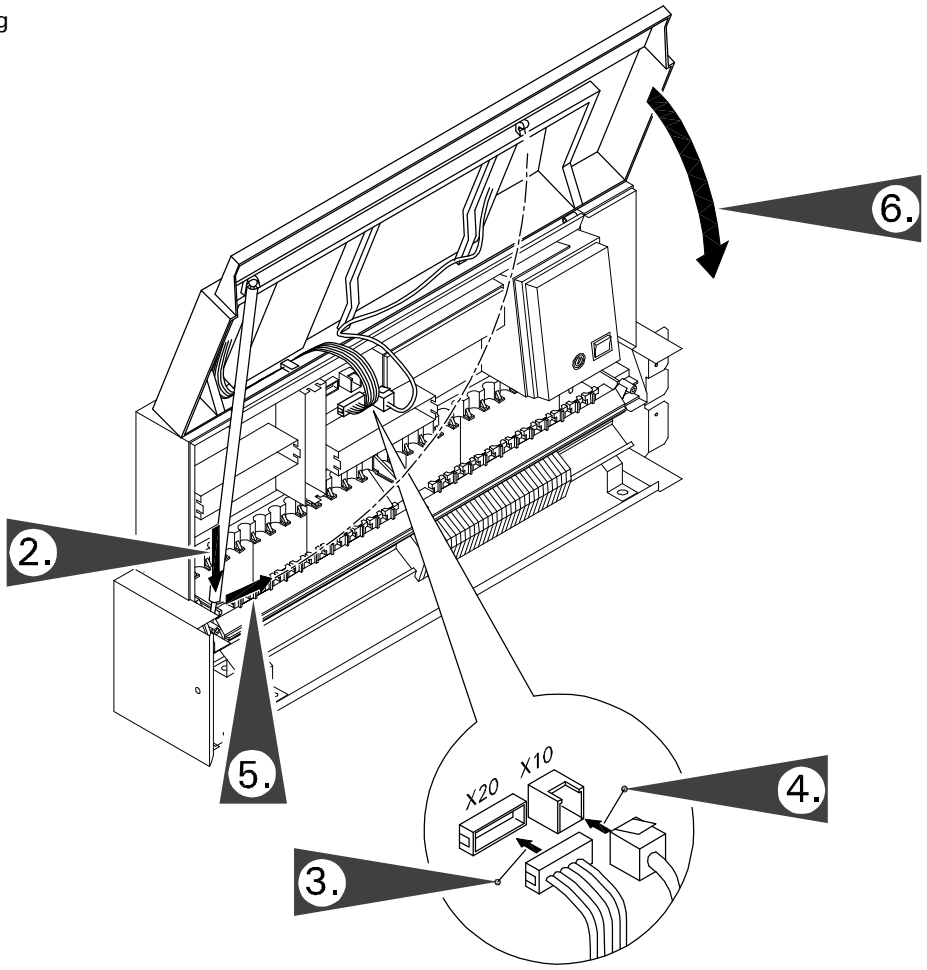
4. Insert the plug of the programming unit into plug "X10". Use cable guides in cover for routing.

5. Engage the stay bar in the front housing.

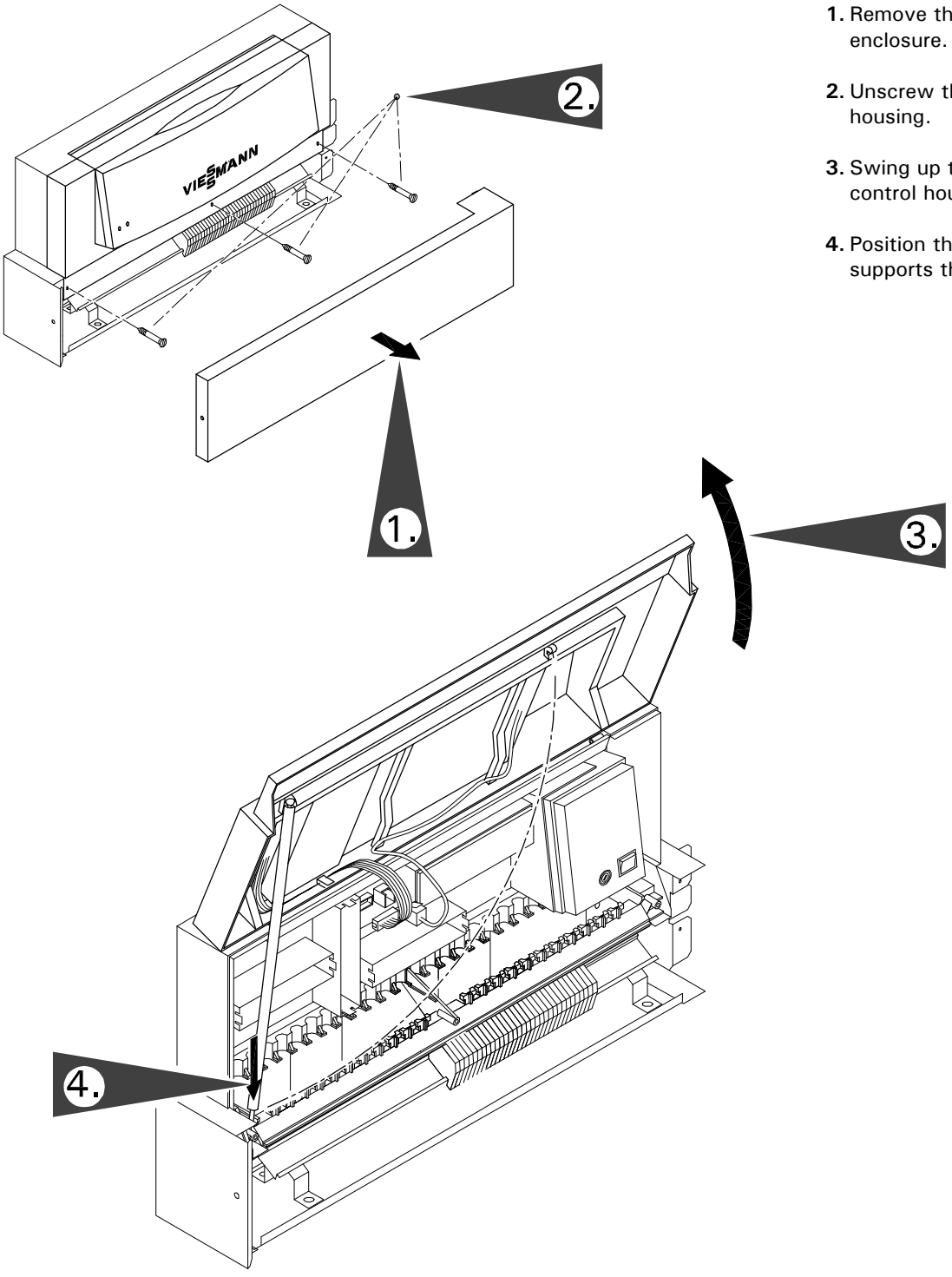
6. Close the front of the housing.

7. Secure front housing with supplied screws.

8. Install cover of the connection enclosure and support with supplied screw.

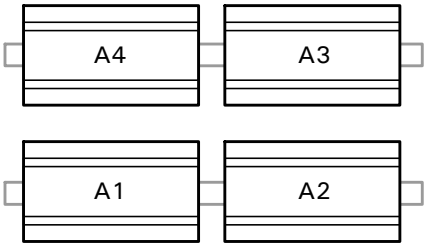


Opening the control unit



1. Remove the cover of the connection enclosure.
2. Unscrew the screws from the front housing.
3. Swing up the front part of the control housing.
4. Position the stay bar so that it supports the front housing.

Installing modules



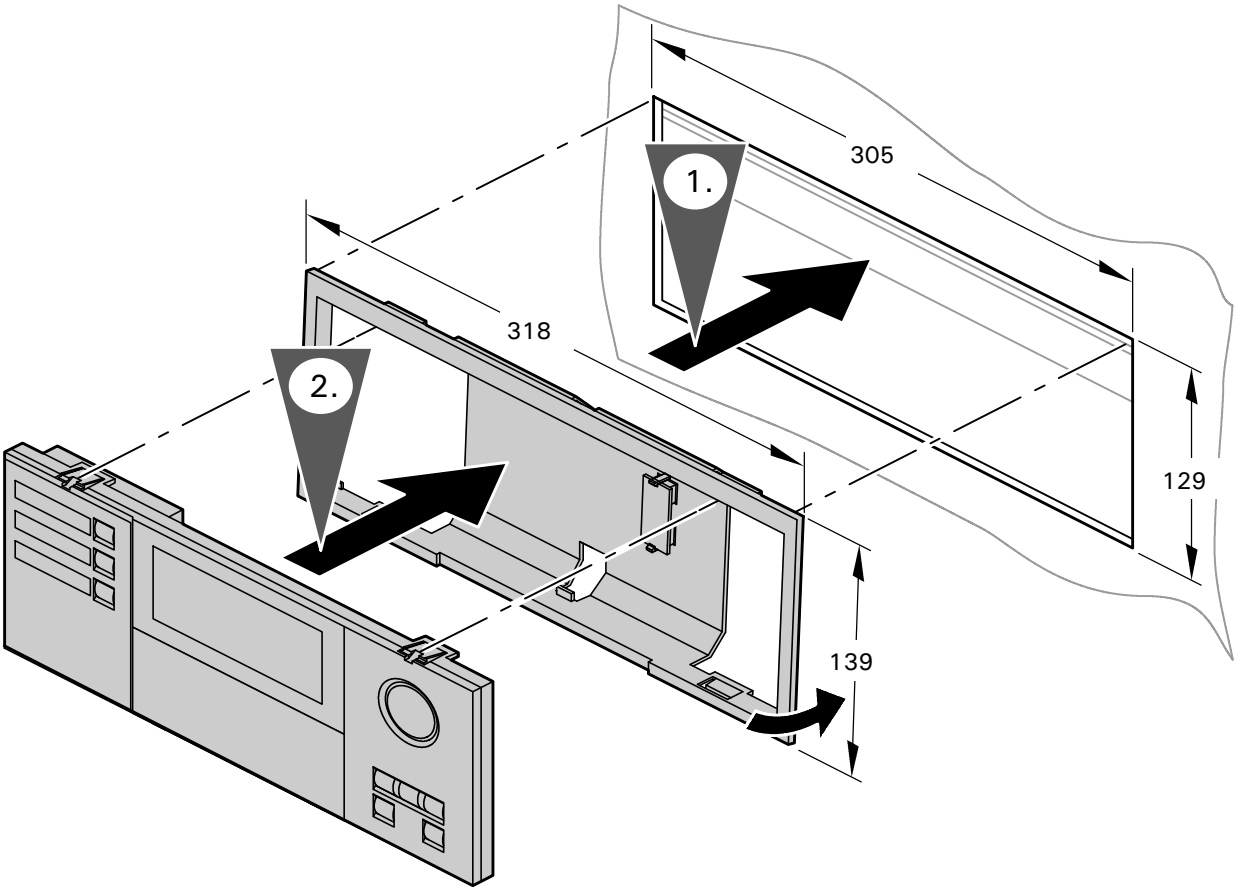
1. Install the modules in accordance with the layout indicated on DIN rail inside the control panel.
2. Connect the modules in accordance with the overview on page 58 and 59, using the connecting cables provided.

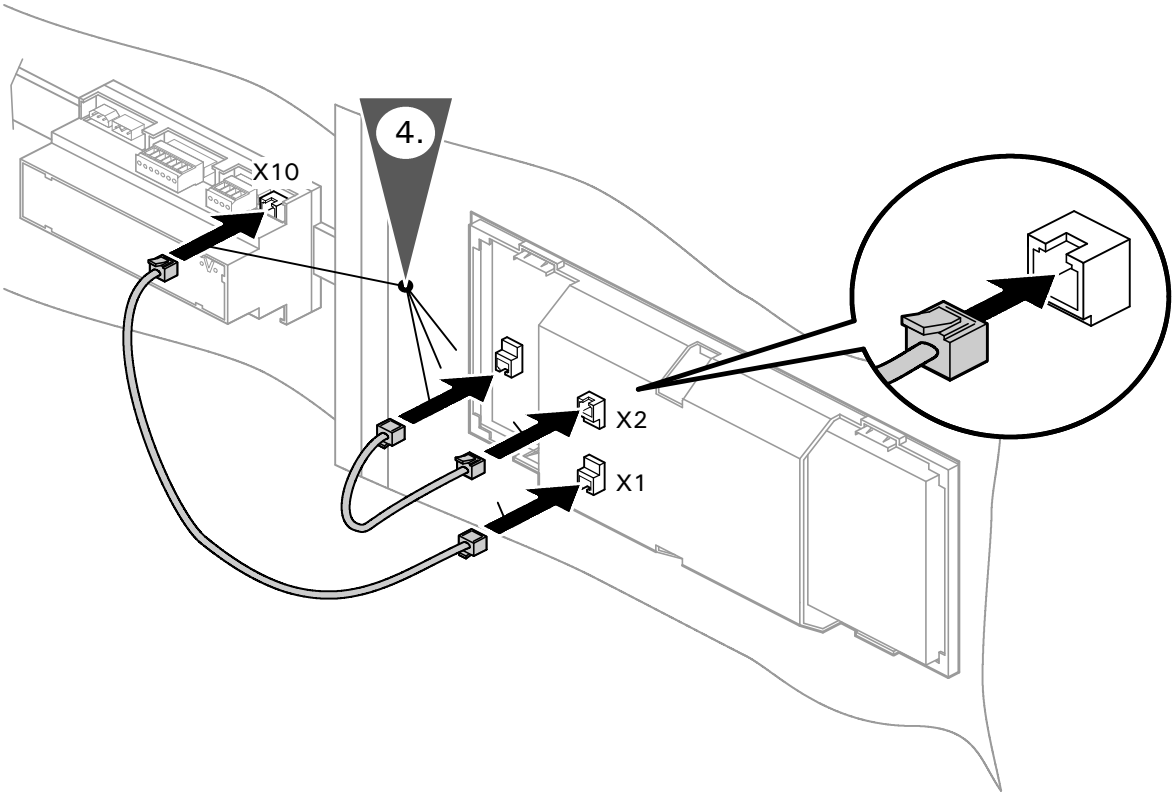
A1 Power supply module
A2 Cascade electronic module
A3 Power module
A4 Extension module

Installing the programming unit

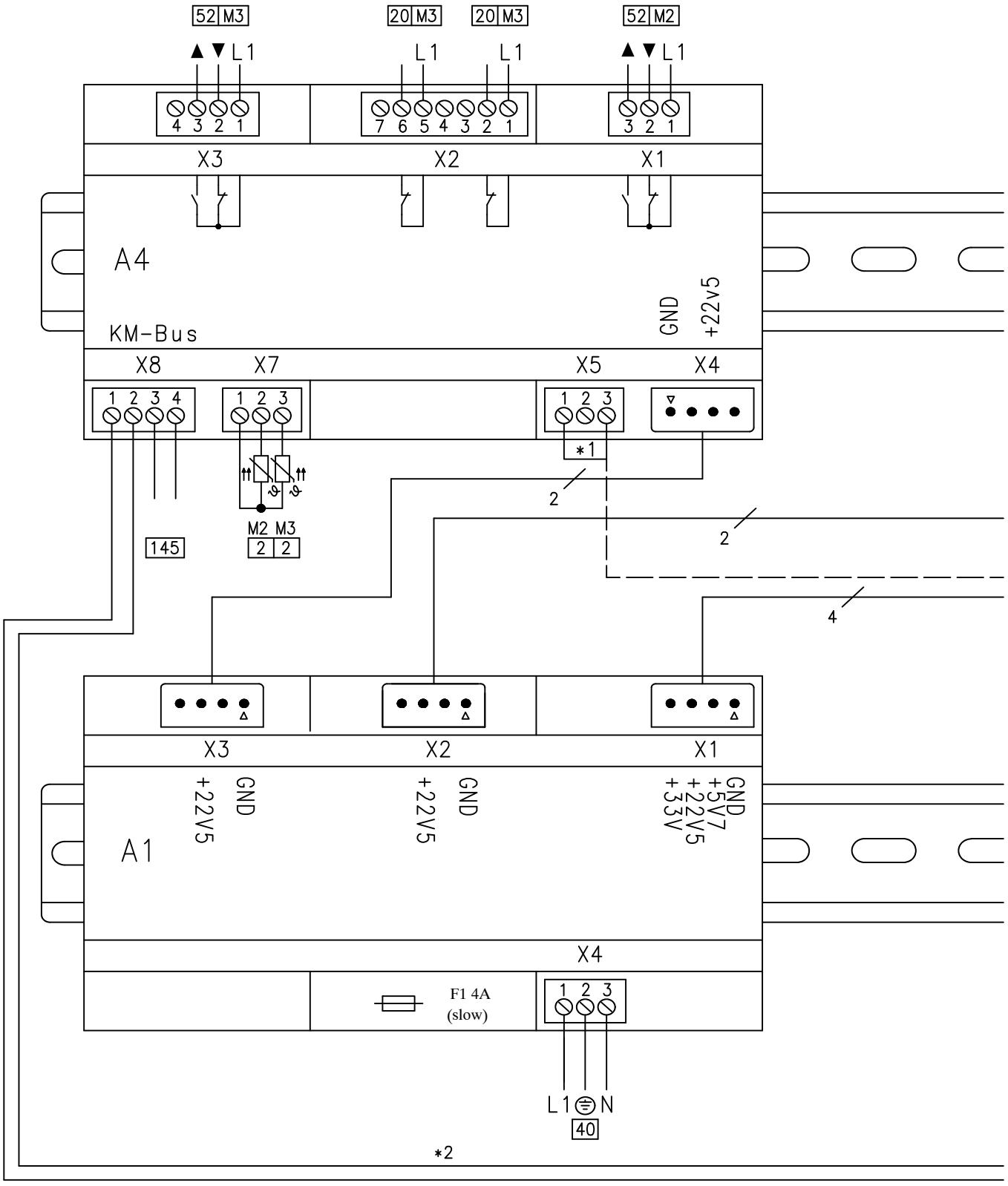
1. Make a cutout with the dimensions 305 × 129 mm in the front door of the control panel.
   When installing two programming units, maintain a distance between both of 20 mm.
2. Snap the frame into place.
3. Insert the programming unit.
4. Plug the connecting cable into the back of the programming unit and into the cascade electronic module (A2).

Installing the programming unit (cont.)





Summary of electrical connections



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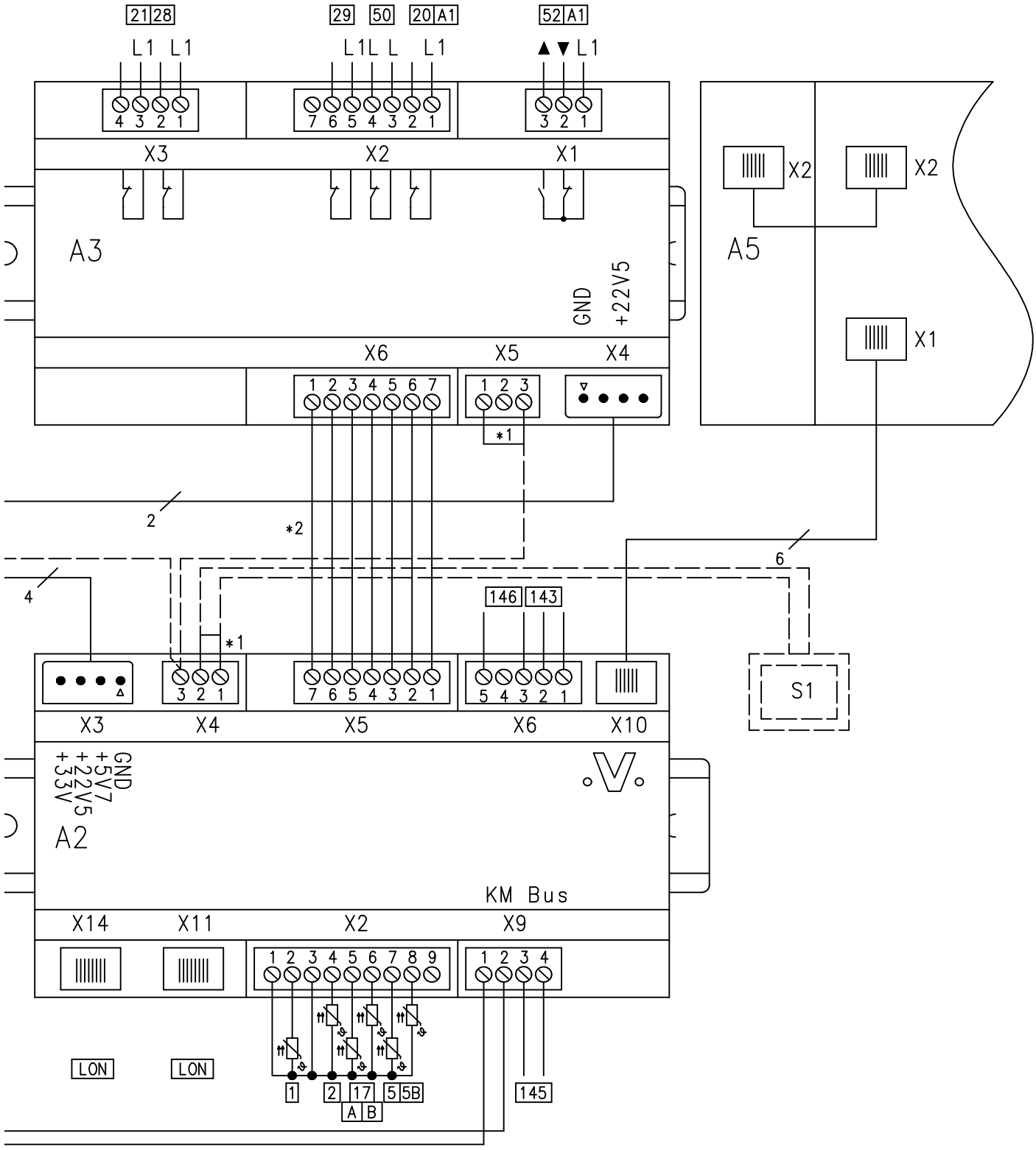
Summary of electrical connections



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Summary of electrical connections

A1 Power supply module
[40] Power supply connection

A2 Cascade electronic module
[1] Outdoor temperature sensor (accessories)
[2] Common supply temperature sensor
[5] DHW tank temperature sensor (accessories)
[5] [B] 2nd tank temperature sensor (accessories)
[17] [A] Temperature sensor T1
[17] [B] Temperature sensor T2
or
temperature sensor - DHW tank loading system
[143] External connections
[145] KM BUS users (accessories)
[146] External connections
LON Connecting cable for data transfer between the control units
S1 Emissions test switch *1 (optional)

A3 Power module
[20] A1 Heating circuit pump or
DHW tank loading system
[21] DHW tank pump (accessories)
[28] DHW re-circulation pump
[29] Shunt or supply pump
[50] Compiled failure alarm
[52] A1 Three-way return elevation valve

A4 Expansion module
[2] M2/M3 Supply temperature sensor
[20] M2/M3 Heating circuit pump
[52] M2/M3 Mixing valve actuator

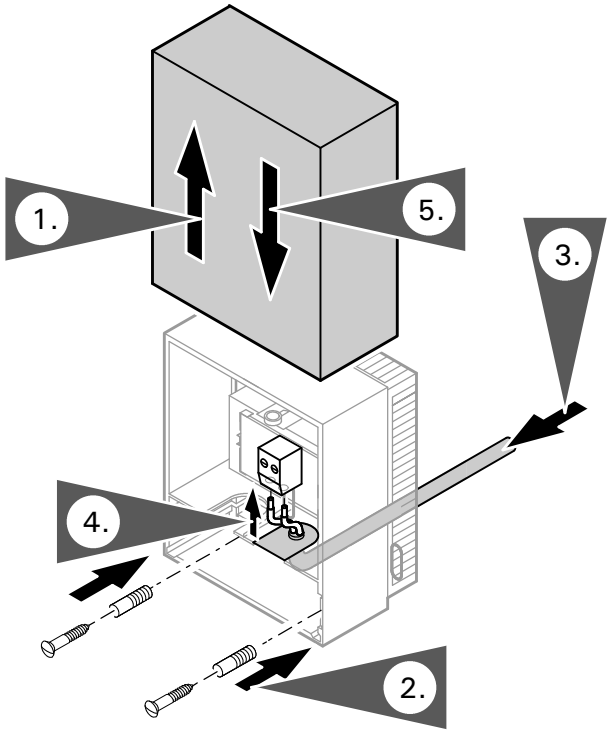
A5 Programming unit
incl. connecting cable

*1 *Remove both jumpers when connecting the emissions test circuit.*

Sensor connection (continued)

Outdoor temperature sensor

The outdoor temperature sensor should be mounted 2 to 2.5 metres above ground level on the north or north-west facing wall of the building. In the case of multi-storey buildings, it should be mounted in the upper half of the second storey. Make sure that the sensor is not located over windows, doors and air vents, nor immediately beneath a balcony or guttering.
Do not paint over the outdoor temperature sensor housing.



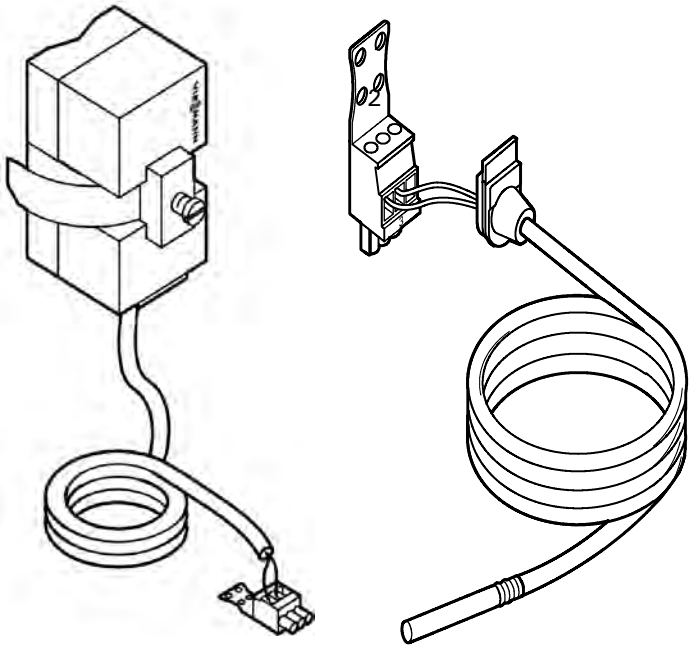
1. Remove the cap.
2. Mount the bottom part of the sensor housing.
3. Pull the sensor wire through the opening in the terminal compartment and through the strain relief provided.
4. Connect the wires to the terminals.
5. Place the cap over the outdoor temperature sensor.

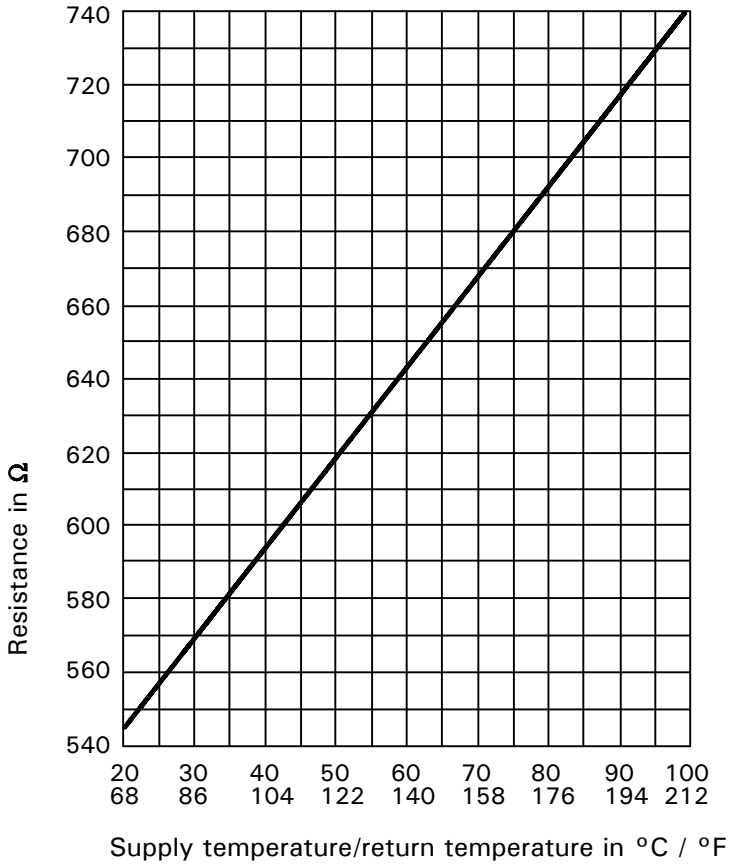
⚠ WARNING

When extending wire, there is the possibility of exposure to electromagnetic interference.
Avoid running wires beside or near high voltage 120/240 VAC conductors. If proximity to high voltage conductors cannot be avoided, use stranded, twisted pair or shield design wire. Ensure that only one end of the shielding is grounded.

Sensor connection (continued)

Strap-on temperature sensor and immersion temperature sensor





*For measuring the **supply** temperature.*

Electrical connection
Connect in accordance with the overview on page 58 and 59 and the control panel wiring diagram. Remove the plug from the sensor cable.

Check the sensor

1. Disconnect the sensor from terminals.

2. Measure resistance of sensor at terminal "2" of the plug.

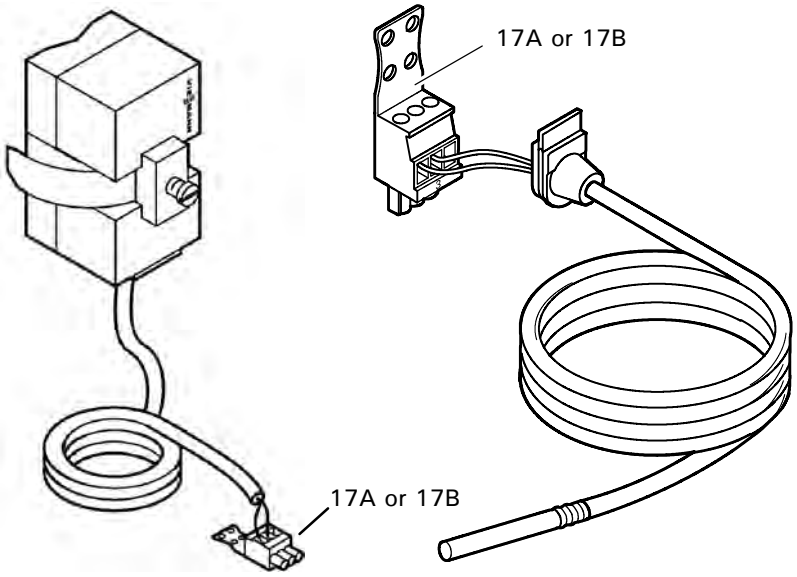
Flow/return temperature in °C / °F	Resistance in Ω
30 / 86	569
40 / 104	592
60 / 140	643

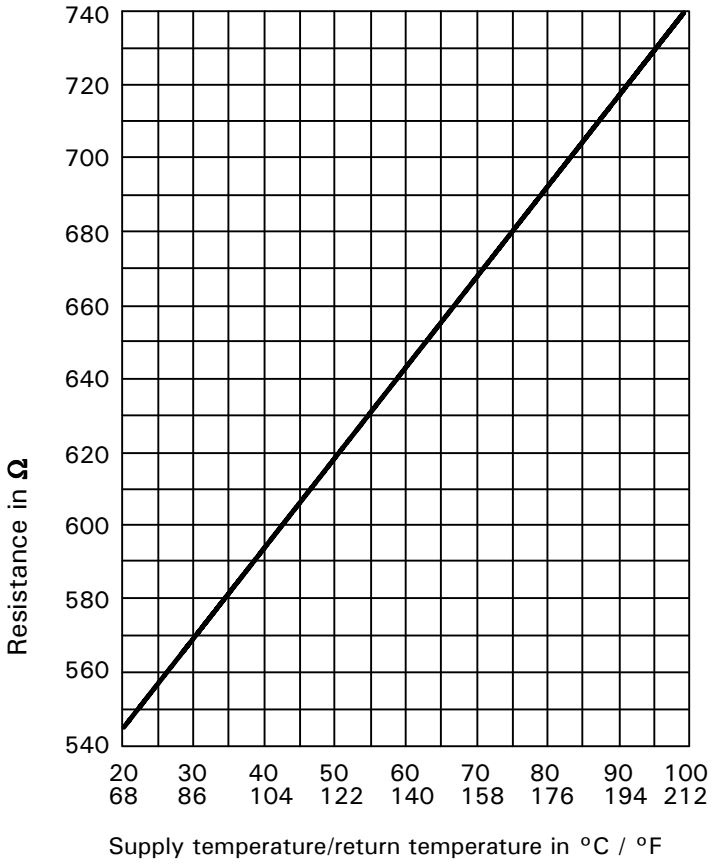
3. Compare the value measured with the current temperature. If the value differs significantly, check installation and, if necessary, replace sensor.

Technical data
Degree of protection: IP 32
Ambient temperature
- during operation:
  0 to + 100 °C
  32 to + 212 °F
- during storage and transport:
  –20 to + 70 °C
  - 4 to + 158 °F

Sensor connection (continued)

Strap-on temperature sensor and immersion temperature sensor





*For measuring the **return** temperature.*

Electrical connection
Connect in accordance with the overview on page 58 and 59 and the control panel wiring diagram. Remove the plug from the sensor cable.

Check the sensor

1. Disconnect the sensor from terminals.

2. Measure resistance of sensor at terminals "1" and "2" of the plug.

Flow/return temperature in °C / °F	Resistance in Ω
30 / 86	569
40 / 104	592
60 / 140	643

3. Compare the value measured with the current temperature. If the value differs significantly, check installation and, if necessary, replace sensor.

Technical data
Degree of protection: IP 32
Ambient temperature
- during operation:
  0 to + 100 °C
  32 to + 212 °F
- during storage and transport:
  –20 to + 70 °C
  - 4 to + 158 °F

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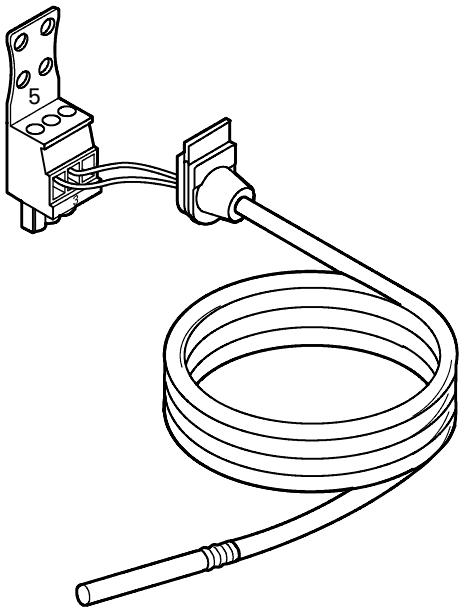
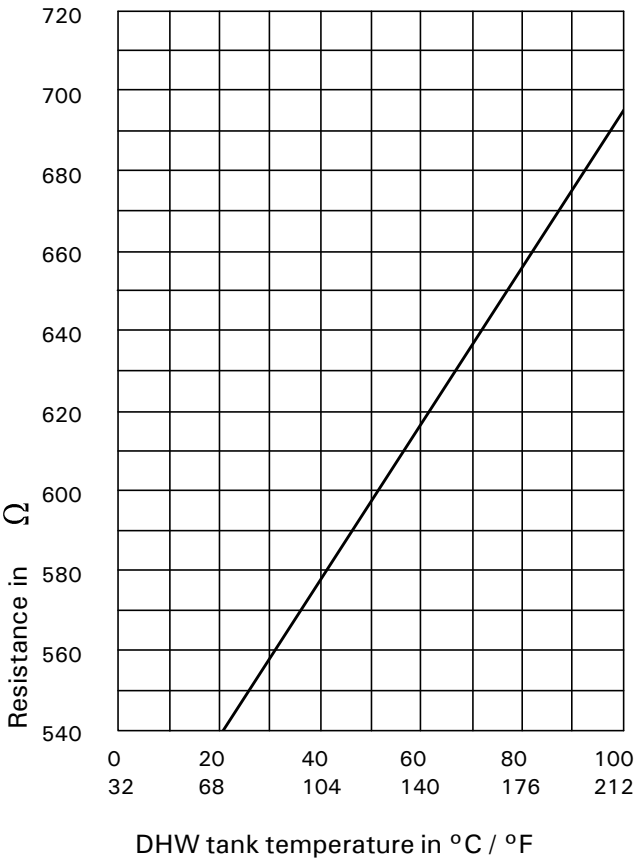
Sensor connection (continued)

DHW tank temperature sensor

*The sensor measures the **domestic hot water tank** temperature.*





Heating systems with domestic hot water heating (single-boiler systems only)

1. Install the DHW tank temperature sensor.

   See installation instructions for domestic hot water tank

   Please note:
   When installing the sensor in DHW tanks of other makes, make sure that the sensor is pressed against the sensor well of the DHW tank by means of a suitable device.

2. Ensure that the **maximum** permissible domestic hot water temperature is not exceeded. If necessary, install a suitable safety device for this purpose.

Check the sensor

1. Disconnect the sensor from the terminals.

2. Measure resistance of sensor at terminals "1" and "2" of the plug.

DHW tank temperature in °C / °F	Resistance in Ω
40 / 104	578
50 / 122	597
60 / 140	616

3. Compare the value measured with the current temperature. If the value differs significantly, check installation and, if necessary, replace sensor.

Technical data
Degree of protection: IP 32
Ambient temperature
- during operation:
  0 to + 90 °C
  32 to + 194 °F
- during storage and transport:
  -20 to + 70 °C
  - 4 to + 158 °F

Electrical connection
Connect in accordance with the overview on page 58 and 59 and the control panel wiring diagram.
Remove the plug from the sensor cable.

Heating systems without domestic hot water heating
Do **not** connect the DHW tank temperature sensor.

Connection of the pumps

Available pump connections

[20] Heating circuit pump or common supply pump, DHW tank loading system on A3
or
heating circuit pump, mixing valve circuits M2, M3 on A4
[21] DHW tank loading pump on A3
[28] DHW re-circulation pump on A3
[29] Shunt pump or supply pump on A3

Implement the connection on A3 or A4 in accordance with the overview on page 58 and 59 and the control panel wiring diagram.

Connection of modulating valve actuators

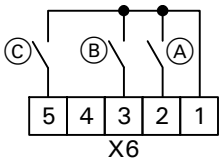
Use as:

- Actuator for mixing valve for DHW tank loading system on A3
- Actuator, mixing valve circuit M2/M3 on A4

Implement the connection [52] on A3 or A4 in accordance with the overview on page 58 and 59 and the control panel wiring diagram.

Connection of external contacts

Implement the connection 143/146 on A2 in accordance with the overview on page 58 and 59 and the control panel wiring diagram.



Dry contacts:
Ⓐ External heating program changeover/ external "Mixing valve open"

Ⓑ External blocking/ external "Mixing valve close"

Ⓒ External heat demand

Ⓐ External heating program changeover or mixing valve "open"

The manually pre-selected heating program can be changed via this contact, (see table below) enabling the mixing valves to be opened.

Allocation of the heating circuits via coding address 91 and 9A.

Ⓑ External disable/external mixing valve "closed"

Closing the dry contact causes the burner to shut down or the mixing valve to be closed.
Allocated boiler or shunt pumps are switched OFF, and isolation valves are closed.

Allocation to the heating circuits via coding address 99.
The function "mixing valve closed" has priority over "mixing valve open".

⚠Heating circuits are no longer frost protected during mixing valve cosed. A minimum boiler return temperature is not maintained during external disabling.

Ⓒ External heat demand

Closing the dry contact starts the boiler burners subject to load via a set point temperature (coding address 9b) on Vitotronic 300-K.

The supply temperature is limited via the set min. and max. supply temperature.

Manually pre-selected heating program (with open contact)		**Coding 2**		**Changed heating program** (with closed contact)
⏻ or	Room heating OFF/ DHW OFF	d5 : 0 (factory default)	<–>	Continuous operation with reduced room temperature/DHW OFF
or	Room heating OFF/ DHW ON	d5 : 1	<–>	Continuous operation with normal room temperature/DHW in accordance with coding address 64
or	Room heating ON/ DHW ON			

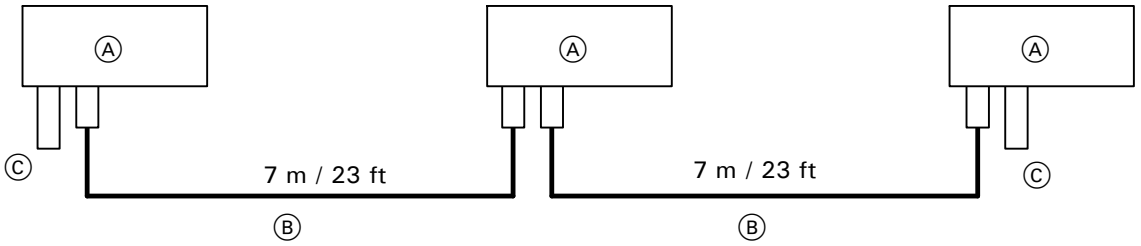
Connection of the compiled failure alarm

Implement the connection in accordance with the overview on page 58 and 59 and control panel wiring diagram.

Making the LON connection

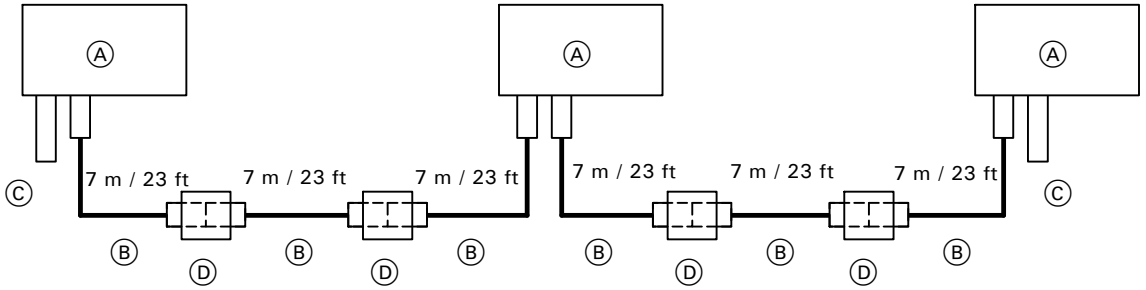
The Viessmann LON system is designed for the Line BUS topology with end of line resistors on both ends.

Connection with Viessmann LON cable



Ⓐ Control unit or Vitocom
Ⓑ LON cable, part no. 7143 495
Ⓒ End of line resistor (standard delivery of Vitotronic 300-K, MW1S) P/N: 7143 497

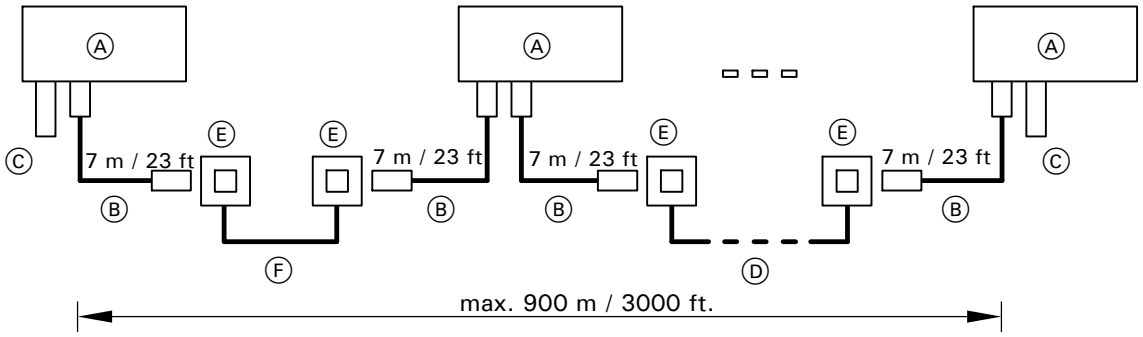
Connection with
- **Viessmann LON cable and**
- **Viessmann LON coupling**



Ⓐ Control unit or Vitocom
Ⓑ LON cable, part no. 7143 495, (max. 3 cables between two devices)
Ⓒ End of line resistor (standard delivery of Vitotronic 300-K, MW1S)
Ⓓ LON coupling, part no. 7143 496

Making the LON connection (cont.)

Connection with
- **Viessmann LON cable,**
- **on-site cable** for extensions up to 900 m / 3000 ft.



Ⓐ Control unit or Vitocom
Ⓑ LON cable, part no. 7143 495
Ⓒ End of line resistor (standard delivery of Vitotronic 300-K, MW1S)
Ⓓ Up to 99 participants and the corresponding number of junction boxes and cables
Ⓔ Junction box
Ⓕ Connecting cable (on site)

Please note:
The Viessmann LON system always requires the two wires and shielding. Wires are interchangeable.

Observe the requirements for cabling and operation of the LON interface FTT-10A (see www.echelon.com).

Power supply

Implement the connection in accordance with the overview on page 58 and 59 and control panel wiring diagram.

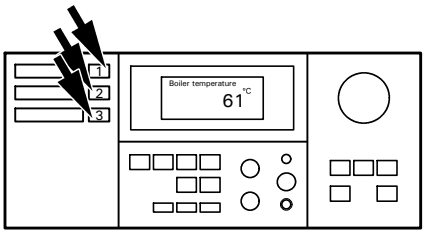
Steps

Page

1. Checking the heating circuit allocation (Vitotronic 300-K, MW1S) ... 72
2. Changing the display language selection (Vitotronic 300-K, MW1S, if necessary) ... 72
3. Checking the fixed high limit (Vitotronic 100) ... 72
4. Connecting control units into the LON system ... 73
5. Carrying out a participant check (Vitotronic 300-K, MW1S) ... 76
6. Match the coding addresses to the respective system version ... 77
7. Checking outputs (actuators) and sensors ... 80
8. Selecting the boiler sequence (Vitotronic 300-K, MW1S) ... 81
9. Adjusting the heating curve (Vitotronic 300-K, MW1S) ... 82

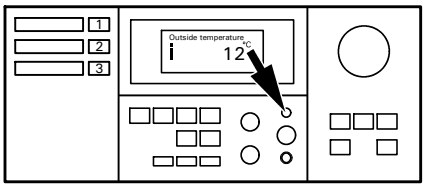
Further step-by-step instructions

Checking the heating circuit allocation (Vitotronic 300-K, MW1S)



- Check whether the label for heating circuit allocation has been affixed to the corresponding field of the programming unit.
- Press the corresponding button before commencing any adjustments.

Changing the display language selection (Vitotronic 300-K, MW1S)



1. Press (i).

2. Select the required language with (−).

3. Confirm with (OK).

Checking the fixed high limit (Vitotronic 100)

Hold down the **test button** during this test **TÜV**; a minimum supply rate must be present.
The minimum boiler flow rate should be 10% of the boiler flow rate at rated output.
Reduce the heat consumption as far as possible. The adjustable high limit is now bypassed.
The burner remains switched ON until the boiler water temperature has reached the safety temperature and the fixed high limit (STB) has switched OFF.

After the burner has been shut down by the fixed high limit,
- release button **TÜV**, the display will show fault D4
- wait until the boiler water temperature has fallen 15 to 20°C / 25 to 35 °F below the set safety temperature, then reset the fixed high limit by pressing button ⇧; fault D4 will clear from the display.

Further step-by-step instructions (cont.)

Connecting control units to the LON system

The LON communication module must be plugged in (see page 46).

Please note:
Data transfer via the LON system can take several minutes.

Vitotronic 100, GC1

1. **Setting the system type**
   Set coding 1 to 01 : 2.
   Coding 1, see page 138.

2. **Setting the boiler number**
   In coding 1, set the boiler number via coding address 07.

3. **Setting the LON participant number**
   In coding 1, set the participant number via coding address 77.

   Please note:
   In a LON system, the same number ***cannot*** *be allocated twice.*

Vitotronic 300-K, MW1S

1. **Setting the number of boilers**
   In coding 1, set coding address 35.
   Coding 1, see page 148.

2. **Setting the LON participant number**
   In coding 1, set the LON participant number via coding address 77 (factory default condition 77 : 5).

   Please note:
   In a LON system, the same number ***cannot*** *be allocated twice.*

Further step-by-step instructions (cont.)

Updating the LON particpant list on Vitotronic 300-K, MW1S

Only possible if all participants are connected and the control unit is programmed as fault manager (coding 79 : 1, factory default condition)

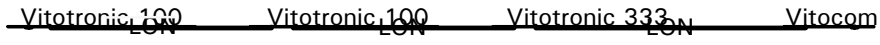
Please note:
In each heating system, ***only one Vitotronic*** *may be encoded as fault manager.*

1. Press ⌐ and OK simultaneously for approx. 2 seconds.
   The participant check is initiated
   (see page 76).

2. Press ⊣.
   The participant list is updated after approx. 2 minutes.
   The participant check is completed.

Further step-by-step instructions (cont.)

Example of a multi-boiler system

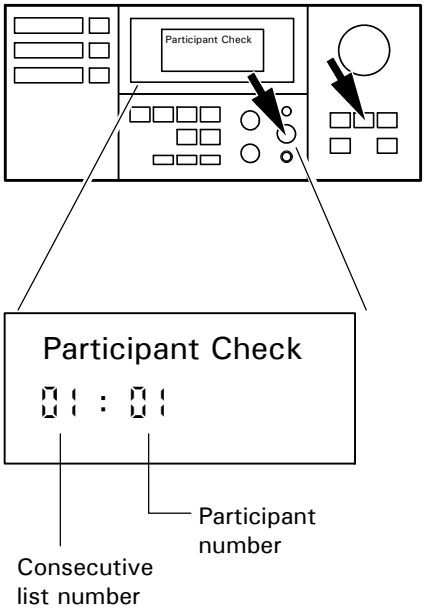


Participant no. 1 Coding 77 : 1	Participant no. 2 **Set** coding 77 : 2	Participant no. 5 Coding 77 : 5	Participant no. 99
Boiler number 1 Coding 07 : 1	Boiler number 2 **Set** coding 07 : 2	––	––
––	––	Number of connected boilers **Set** coding 35 : 2	––
Viessmann system number Coding 98 : 1	Viessmann system number Coding 98 : 1	Viessmann system number Coding 98 : 1	––
Remote monitoring LON participant Coding 9C : 20	Fault monitoring LON participant Coding 9C : 20	Fault monitoring LON participant Coding 9C : 20	––

Further step-by-step instructions (cont.)

Carrying out a participant check (Vitotronic 300-K, MW1S)

The communication with the system devices connected to the fault manager is tested with a participant check.
Preconditions:
- The control unit must be encoded as fault manager (coding 79 : 1).
- The LON participant number must be encoded in all control units (see page 73).
- The fault manager participant list must be up to date (see page 74).



1. Press ↩ and OK simultaneously for approx. two seconds.
2. Select the required participant with ⊕ and ⊖.
3. Activate checking with OK.
   Check flashes until its completion. The display and all button illuminations of the selected participant flash for approx. 60 seconds.
   - **Check OK** flashes during communication between both devices.
   - **Check not OK** is displayed, if communication is not established. Check the LON connection (see page 70) and coding (see page 75).
4. For checking further participants, proceed as described under items 2 and 3.
5. Press ↩ and OK simultaneously for approx. one second.

Further step-by-step instructions (cont.)

Matching coding addresses to respective system version

Vitotronic 100

In coding 1, set the following coding addresses:

01 Multi-boiler system
02 Burner type
03 Oil or gas operation
07 Boiler number

In coding 2, set the following coding addresses:

0C Return temperature control
0d Therm-Control
4C Function plug [20]
4d Function plug [29]
4E Function plug [52]
77 LON participant number
98 Viessmann system number

Vitotronic 333, MW1S

In coding 1, set the following coding addresses:

00 System design
35 Number of boilers in the cascade
36 Minimum supply temperature limit of the cascade
37 Maximum limit of the cascade supply temperature
3b Control type
3C Control strategy
40 Actuator run time
A2 DHW priority
A5 Heating circuit pump logic function (economy circuit)
C5 Minimum limit of the heating circuit supply temperature
C6 Maximum limit of the heating circuit supply temperature

In coding 2, set the following coding addresses:

39 Permanent lead boiler
3A Permanent last boiler
4C Function plug [20]
4d Function plug [29]
4E Function plug [52]
55 Function DHW temperature control
77 LON participant number
7A Central control
7F Detached house or apartment building
98 Viessmann system number

Further step-by-step instructions (cont.)

Matching the control unit to a two stage burner (Vitotronic 100, GC1)

1. Start up the burner.

2. Set the override switch to ☝.

3. Determine the maximum burner output through the fuel consumption.
Record the relevant value.

4. Set the override switch to ⟲.

5. Press ⏻ and OK simultaneously for approx. two seconds.
Relay test is activated.

6. Activate the burner stage 1 ON function with ⊕ (display shows: 4).

7. Determine the minimum burner output (basic load) through the fuel consumption.
Record the relevant value.

8. Press OK.
Relay test is completed.

9. Set the determined values in coding 1, see the table below and page 138.

Address	Setting the:
08	Units and tens of the determined maximum output; e.g. max. output: 225 kW – set here: 25 values including 199 kW can be entered directly
09	Hundreds of the determined maximum output; e.g. max. output: 225 kW – set here: 2
0A	Relationship between basic output and max. output in percent; e.g. basic output: 135 kW max. output: 225 kW $\frac{135\ kW}{225\ kW} \times 100\ \% = 60\ \%$

Further step-by-step instructions (cont.)

Matching the control unit to a modulating burner (Vitotronic 100, GC1)

Please note:
The burner must be fully adjusted. To achieve a wide modulating range, set the minimum output as low as possible (observe the chimney and flue gas system).

1. Start up the burner.

2. Set the override switch to ☝.

3. Wait until the burner actuator is set to maximum output.

4. Determine the maximum burner output through the fuel consumption.
Record the relevant value.

5. Press ⏻ and OK simultaneously for approx. two seconds.
Relay test is activated.

6. Activate the mod. burner close function with ⊕ (display shows: 4), and set the override switch to ↻.
Check the time it takes until the actuator is at minimum output.
Record the relevant value.

7. Determine the minimum burner output (basic load) through the fuel consumption.
Record the relevant value.

8. Activate the mod. burner open function with ⊖ (display shows: 2), and set mod. burner neutral function (display shows: 3) using ⊕, after 1/3 of the time checked under item 6 (stop burner module controller).

9. Determine the partial output through the fuel consumption.
Record the relevant value.

10. Press OK.
Relay test is completed.

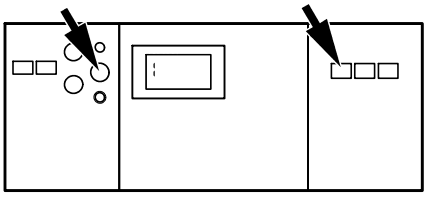
11. Set the determined values in coding 1, see the table below and on page 138.

Address	Setting of
08	Units and tens of the determined maximum output; e.g. max. output: 225 kW – set here: 25 values including 199 kW can be entered directly.
09	Hundreds of the determined maximum output; e.g. max. output: 225 kW – set here: 2
15	Determined run time in seconds
0A	Relationship between basic output and max. output in percent; e.g. basic output: 72 kW max. output: 225 kW $\frac{72\ kW}{225\ kW} \times 100\ \% = 32\ \%$
05	Relationship between partial output and max. output in percent; e.g. partial output: 171 kW max. output: 225 kW $\frac{171\ kW}{225\ kW} \times 100\ \% = 76\ \%$

Further step-by-step instructions (cont.)

Checking outputs (actuators) and sensors

Vitotronic 100
■ **Relay test**

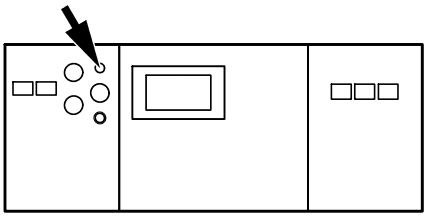


1. Press ⏻ and OK simultaneously for approx. two seconds.
2. Select the relay outputs with ⊕ or ⊖.
3. Press OK.

The following relay outputs may be selected:

Display indication	Relay function
1	Burner or stage 1 ON
2	Burner stage 1 and 2 ON or modulation up
3	Burner modulation neutral
4	Burner stage 1 ON (modulation down)
5	Output 20 ON
6	Output 29 ON
7	Output 52 open
8	Output 52 neutral
9	Output 52 close
11	Central fault message ON

■ **Check sensors**

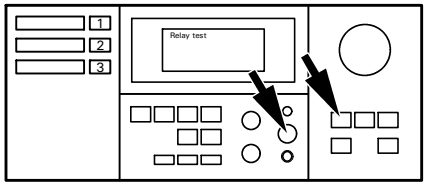


1. Press i.
   Scanning operating conditions is active, see page 88.
2. Scan the actual temperature with ⊕ or ⊖.
3. Press i.
   Scanning is completed.

Further step-by-step instructions (cont.)

Vitotronic 300-K, MW1S

■ **Relay test**



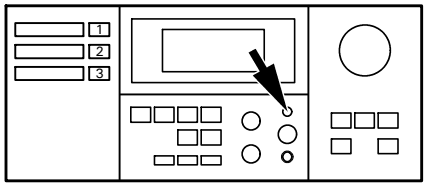
1. Press ⏻ and OK simultaneously for approx. two seconds.
2. Select the relay outputs with ⊕ or ⊖.
3. Press OK.

The following relay outputs may be selected:

- Output 20 ON
- Output 29 ON
- Output 52 open
  Output 52 ntr.
  Output 52 close
- DHW tank heating pump ON
- DHW recirculation pump ON
- Heating pump (M2) ON
- Heating pump (M3) ON
- Mixing valve (M2) open
- Mixing valve (M2) close
- Mixing valve (M3) open
- Mixing valve (M3) close
- Central fault display ON

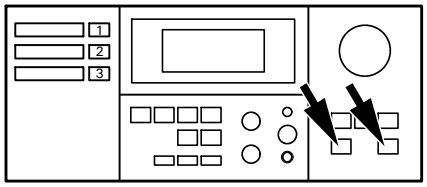
Please note:
The illuminated heating circuit selector button indicates the corresponding heating circuit.

■ **Check sensors**



1. Press i.
   Scanning operating conditions is active, see page 93.
2. Scan the actual temperature with ⊕ or ⊖.
3. Press i.
   Scanning is completed.

Selecting the boiler sequence (Vitotronic 300-K, MW1S)



1. If required:
   In coding 2, set coding addresses 39 (permanent lead boiler) and 3A (permanent last boiler).
2. Press and simultaneously for approx. two seconds.
3. Select the required boiler sequence with ⊕ or ⊖.
   By pressing ⊕ and ⊖ simultaneously, you can exit the adjustment without saving any modifications made.
4. Press OK.
   The adjustment has been transferred.
5. In coding 2, set the coding addresses 38, 41, 42, 43 and 44; see also the function description.

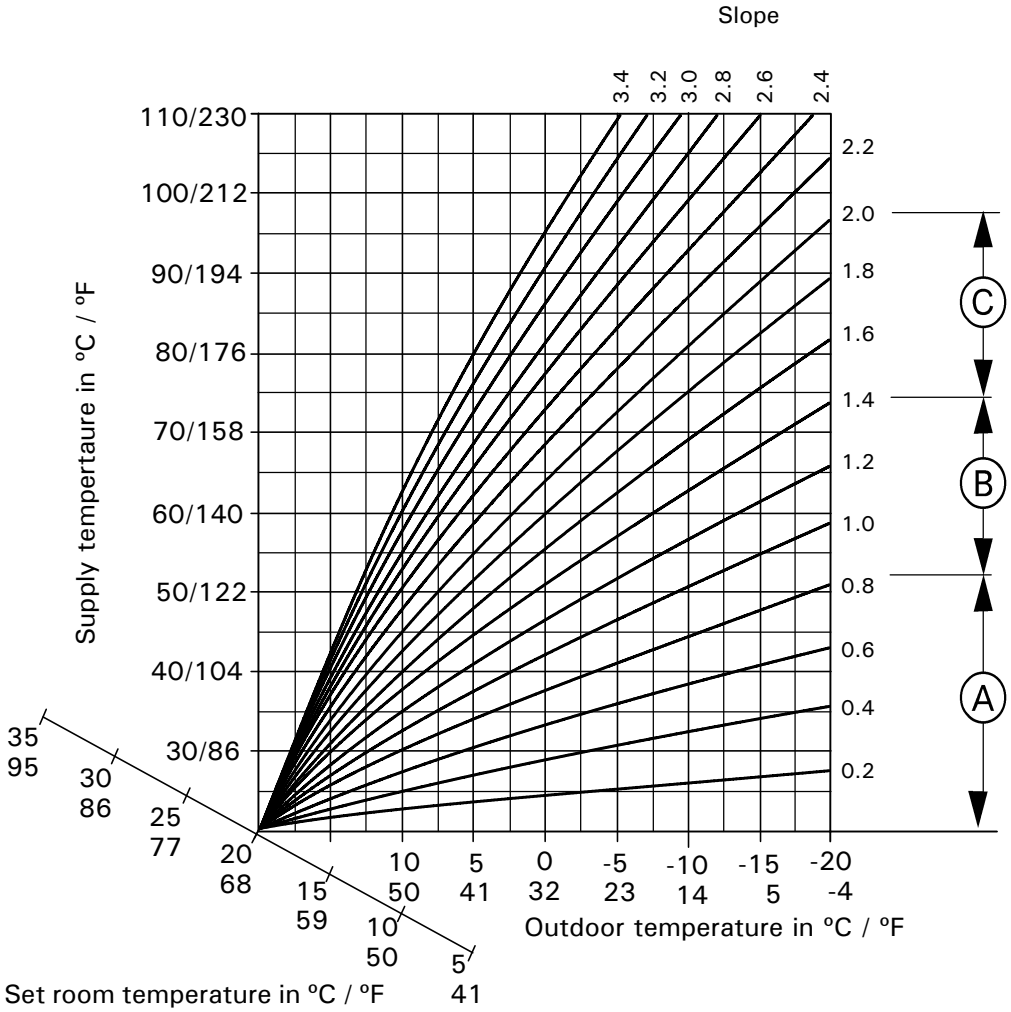
Further step-by-step instructions (cont.)

Adjusting the heating curve (Vitotronic 300-K, MW1S)

The heating curves illustrate the relationship between the outdoor temperature and the boiler water or the supply temperature. To put it simply: The lower the outdoor temperature, the higher the boiler water or supply temperature. The room temperature again depends on the boiler water or the supply temperature.

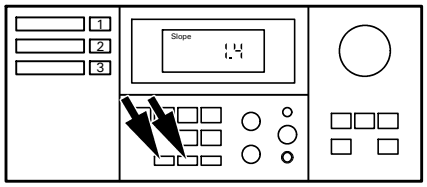
Factory default settings:
- Slope: ◺ = 1.4
- Shift: ◿ = 0

Generally, the heating curve is set:
- in range Ⓐ for underfloor heating systems,
- in range Ⓑ for low temperature heating systems (according to the Energy Savings Order),
- in range Ⓒ for heating systems with boiler water temperatures above 75 °C / 167 °F.



Further step-by-step instructions (cont.)

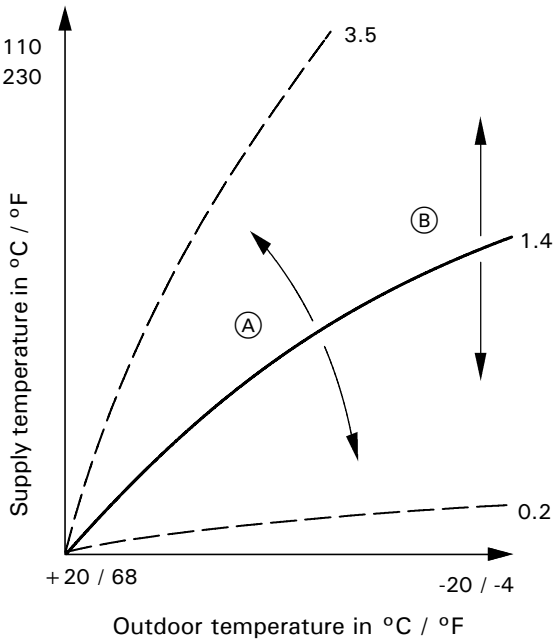
Changing slope and shift
(for every heating circuit separately)



1. Call up slope with ⩘,
adjustable value 0.2 to 3.5;
call up shift with ⩗;
adjustable value −13 to +40 °C /
8.6 to 104 °F.

2. Change the value with ⊕ or ⊖.

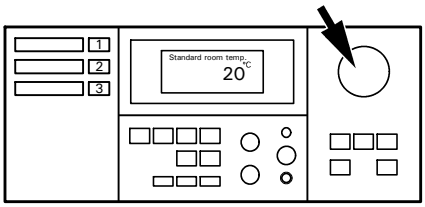
3. Confirm the set value with OK.



Ⓐ Change slope
Ⓑ Change shift

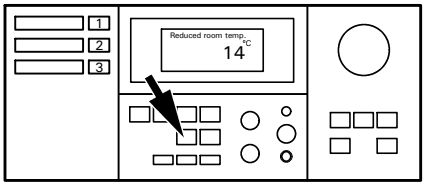
Further step-by-step instructions (cont.)

Adjusting the normal room temperature
(for every heating circuit separately)



Normal room temperature:
Select the normal day temperature with the set value adjuster.

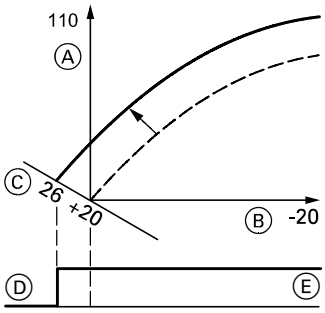
The value will be automatically transferred after approx. 2 seconds.



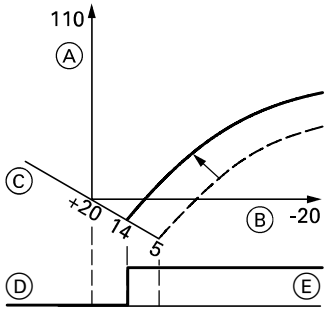
Reduced room temperature:
1. Call up the reduced night temperature with ☾.

2. Change the value with ⊕ or ⊖.

3. Confirm the set value with OK.



Example 1:
Adjustment of the normal room temperature from 20 to 26 °C / 68 to 79 °F.



Example 2:
Adjustment of the reduced room temperature from 5 to 14 °C / 41 to 57 °F.

Temperature conversion:

°C	°F
-20	-4
5	41
14	57
20	68
26	79
110	230

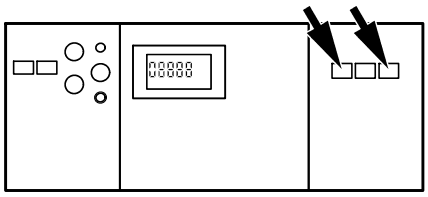
Ⓐ Boiler water temperature or supply temperature in °C / °F
Ⓑ Outdoor temperature in °C / °F
Ⓒ Set room temperature in °C / °F
Ⓓ Heating circuit pump OFF
Ⓔ Heating circuit pump ON

Accordingly, the heating curve is adjusted along the set room temperature axis, resulting in modified start/shutdown characteristics for the heating circuit pumps, if the heating circuit pump logic is active.

Service level summary

Function	Entry	Exit	Page
Relay test	Press the ⏻ and "OK" buttons simultaneously for approx. two seconds	Press the "OK" button	80
Temperatures, boiler coding card and brief scans	Press the ⏻ and 🛁 buttons simultaneously for approx. 2 seconds	Press the "OK" button	86
Operating conditions	Press the ⓘ button	Press the ⓘ button	88
Maintenance requirement indication		Press the "OK" button	89
Troubleshooting		Press the "OK" button	95
Error history	Press the 🛁 and "OK" buttons simultaneously for approx. 2 seconds	Press the "OK" button	98
Resetting codings to the factory settings	Press the 🚿 and 🛁 buttons simultaneously for approx. two seconds, press ⏭	––	137
Coding 1	Press the ⏻ and 🚿 buttons simultaneously for approx. 2 seconds	Press the ⏻ and 🚿 buttons simultaneously for approx. 1 second	138
Coding 2	Press the 🚿 and 🛁 buttons simultaneously for approx. 2 seconds	Press the 🚿 and 🛁 buttons simultaneously for approx. 1 second	140

Temperatures, boiler coding card and brief scans



1. Press ⏻ and 🚿 simultaneously for approx. two seconds.
2. Select the required scan with ⊕ or ⊖.
3. Press OK.

Subject to the system equipment level, the following values can be scanned:
(for scans, see table below):

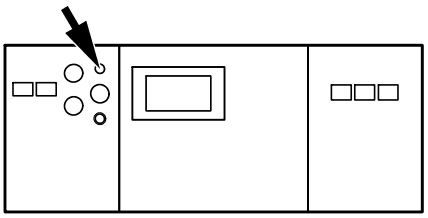
Display indication	Explanation	Notes
0 0000	Scan 0	––
1 0000	Scan 1	––
2 0000	Scan 2	––
3 65 °C	Set boiler water temperature	Effective set value including boiler protection
4 000	Scan 4	––
8 230 °C	Maximum flue gas temperature	See coding address 1F; can be reset to the actual value with ⨯
C 0 0	Boiler coding card	––
b 0d0	Scan b/d	––
L 000	Scan L	––
d 0000	Scan d	––

Temperatures, boiler coding card and brief scans (cont.)

Scans

8	8	8		8	8
0	LON participant number			Software version – communication co-processor	SNVT configuration 0 = Auto 1 = Tool
1	Subnet address/system number			Node address	
2	Number of LON participants			Software version – LON communication module	
4	N/A	System design 1 or 2; Display according to the coded system, see page 140		Software version – programming unit	Software version – control unit
b	N/A	Burner 0 = OFF 1 = Stage 1/basic load 2 = Stage 2/ full load		d	isolation valve 0 = OFF 1 = Pre-heating 2 = Control close 3 = Control 4 = Control open 5 = Open 6 = Time delay
L	N/A	Output reduction 0 = OFF; 1 to 100 %			
o	Equipment recognition hexa-decimal: A0 decimal: 160			Test code for Viessmann service technicians	

Scanning operating conditions



1. Press ⓘ.

2. Select the required operating condition scan with ⊕ or ⊖.

3. Press ⓘ.

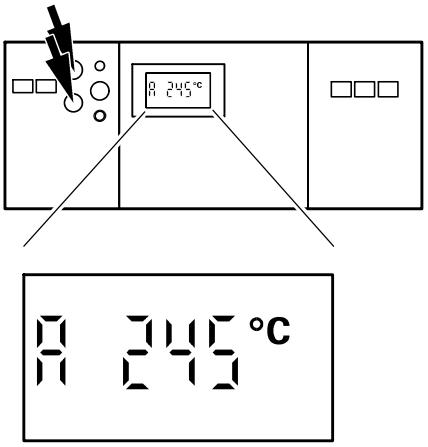
The following values can be scanned subject to the actual system layout:

Display indication	Explanation	Notes
0 01	LON participant number	––
3 65 °C	Boiler temperature	––
5 55 °C	Temperature at sensor “17A”	Only with Therm-Control temperature sensor or with temperature sensor T1
8 190 °C	Flue gas temperature	Only with flue gas temperature sensor
9 60 °C	Temperature at sensor “17B”	Only with temperature sensor T2
▲ 63572 h	Burner run hours Stage 1	The run hours can be reset to 0 with ⏭. The run hours displayed are only approximate values
▲▲ 09572 h	Burner run hours Stage 2	
▲▲▲ 30417 h	Burner starts	The burner starts can be reset to 0 with ⏭

Scanning and resetting maintenance displays

After limits have been reached, which were set up via coding addresses 1F, 21 and 23 (see page 143), the programming unit display flashes one of the following messages.

Please note:
Set coding 24 : 1 and then coding 24 : 0, if maintenance is implemented before a maintenance message is displayed; the set maintenance parameters for run hours and periods are then reset to 0.

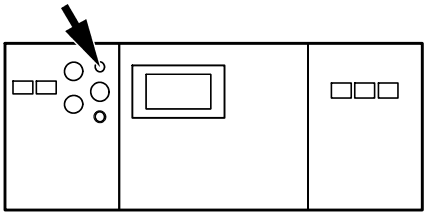


Display indication	Explanation
245 °C	Max. flue gas temperature has been reached
3500 h	Burner run hours have been reached
12	Time interval (e.g. 12 months) has been reached

1. Scan maintenance messages with ⊕ or ⊖.
2. Press OK.
   The maintenance indication in the display is cleared.

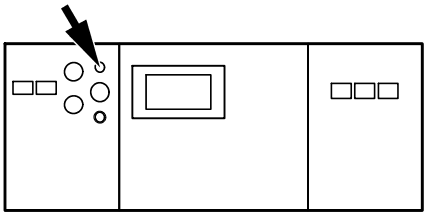
   Please note:
   An acknowledged maintenance message can be redisplayed by pressing OK (approx. three seconds).

After maintenance has been carried out



1. Reset coding 24 : 1 (see page 144) to 24 : 0.

   Please note:
   If coding address 24 is not reset, a new maintenance message will be displayed on Monday morning.



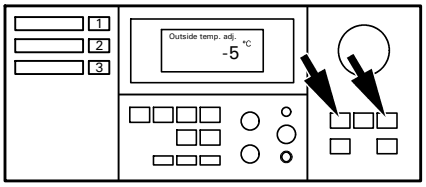
2. If required:
   - Press i
   - Reset burner run hours and burner starts with ⏚ (see page 88)
   - Press i

3. If required:
   - Press ⏻ and 🌡🚿 simultaneously for approx. four seconds
   - Reset maximum flue gas temperature (🌡) with ⏚ (see page 86)
   - Press OK

Service level summary

Function	Entry	Exit	Page
Adjusting display contrast	Press the "OK" and "+" buttons simultaneously; the display will darken	––	––
	Press the "OK" and "-" buttons simultaneously; the display will get lighter	––	––
Participant check	Press the and "OK" buttons simultaneously for approx. 2 seconds	Press the and "OK" buttons simultaneously for approx. 1 sec	76
Relay test	Press the and "OK" buttons simultaneously for approx. two seconds	Press the "OK" button	81
Boiler sequence	Press the and buttons simultaneously for approx. two seconds	Press the "OK" button	81
Temperatures and scans	Press and simultaneously for approx. 2 seconds	Press the "OK" button	91
Operating status	Press the ⓘ button	Press the ⓘ button	93
Maintenance requirement indication	ⓘ (if maintenance flashes)	Press the "OK" button	94
Troubleshooting	Press the ⓘ button	Press the "OK" button	99
Error history	Press the and "OK" buttons simultaneously for approx. 2 seconds	Press the "OK" button	105
Resetting codings to factory settings	Press the and buttons simultaneously for approx. 2 seconds; press the button; confirm by pressing the "OK" button	––	147
Coding 1	Press and simultaneously for approx. 2 seconds	Press the and buttons simultaneously for approx. 1 sec	148
Coding 2	Press the and buttons simultaneously for approx. two seconds; confirm by pressing the "OK" button	Press the and buttons simultaneously for approx. 1 sec	151

Temperatures and brief scans



1. Press ⏻ and simultaneously for approx. 2 seconds.
2. Select the required scan with ⊕ or ⊖.
3. Press OK

The following values can be scanned subject to the actual equipment level:

- Outdoor temperature dampened
- Actual outdoor temperature

→ The dampened outdoor temperature can be reset to the actual outdoor temperature with ⏀

- Boiler sequence
- Actual % output boiler 1 to 4
- Output red. %

→ Boiler output – actual value

- Integral

→ at –1 to –100 start-up integral in percent; at 1 to 100 shutdown integral in percent (▲ – arrow above the word, when the integral increases)

- Actual boiler temp. boiler 1 to 4
- Sensor 17A actual
- Sensor 17B actual

→ Display only if a sensor is connected

- Set DHW temp.
- Actual DHW temp.

→ Display only if a DHW tank sensor is connected

- Actual DHW temp. 1
- Actual DHW temp. 2

→ Display only if two DHW tank temperature sensors are connected

- Set supply temp.
- Actual supply temp.

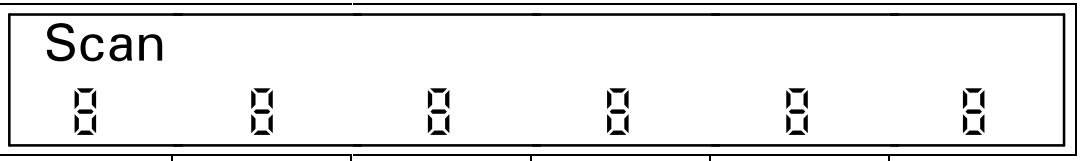
→ Display only if a supply temperature sensor is connected

- Set room temp.
- Actual room temp.

→ Display only if a remote control unit is installed

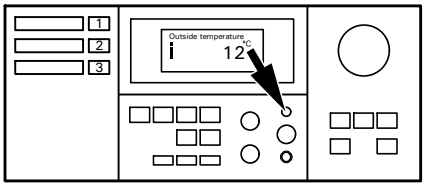
- Scan 1 to Scan 8

→ Scans 1 to 7, see page 92



Scan						
1	Display acc. to system designs (see coding address 00)		N/A	Number of KM BUS participants	N/A	N/A
2	Software version control unit	Software version programming unit	Software version mixing valve extension M2 Printed Circuit Board	N/A	Software version mixing valve extension M3 Printed Circuit Board	Software version Plug-in adaptor for ext. safety equipment
3	Operating mode sys. circuit A1 0 w/o remote control 1 with Vitotrol 200 2 with Vitotrol 300	Software version remote control system circuit A1	Operating mode mixing valve circuit M2 0 w/o remote control 1 with Vitotrol 200 2 with Vitotrol 300	Software version remote control mixing valve circuit M2	Operating mode mixing valve circuit M3 0 w/o remote control 1 with Vitotrol 200 2 with Vitotrol 300	Software version remote control mixing valve circuit M3
4	N/A					
5	LON participant number		Subnet address/system number		Node address	
6	SNVT configuration 0 = Auto 1 = Tool	Software version communication co-processor	Software version neuron chip		Number of LON participants	
7	Device identification*1 hexa-decimal: b8 / decimal: 184		N/A	N/A	N/A	N/A
8	N/A	N/A	N/A	Maximum system design temperature		

Scanning operating conditions



1. Press (i).
2. Select the required scan with (+) or (−).
3. Press (i).

The following values can be scanned subject to the actual equipment level:

- Participant number → If a holiday program has been entered
- Holiday program with departure and return date
- Holiday program active → If a central holiday program is active

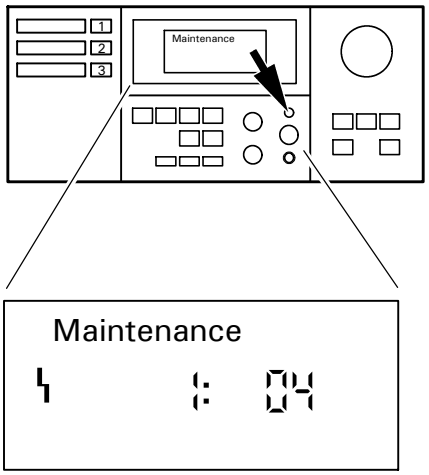
- Outdoor temperature
- Boiler sequence
- Common supply temperature
- Boiler temp. 1 to 4 → Actual value boilers 1 to 4
- Sensor 17A → Display only if a sensor is connected
- Sensor 17B
- DHW temperature → Display only if a DHW tank sensor is connected
- DHW temperature 1 → Display only if two DHW tank
- DHW temperature 2 temperature sensors are connected

- Supply temperature → Display only in conjunction with
- Return temperature mixing valve circuits
- Room temperature → Display only if a remote control unit is installed

- Time
- Date
- Output 20 ON/OFF
- Output 29 ON/OFF
- Output 52 open/close → Position detail in %
- DHW tank heating pump ON/OFF
- DHW recirculation pump ON/OFF
- Heating pump ON/OFF
- Mixing valve open/closed → Position detail in %.
- Languages → Each language can be selected as permanent display language with (OK)

Scanning and resetting maintenance display

Vitotronic 300-K, MW1S displays a maintenance message if:
- Vitotronic 300-K, MW1S has been encoded as fault manager (coding 79 : 1) and
- a maintenance message is displayed at a connected Vitotronic 100, GC1.



ϟ Fault symbol
1 Consecutive number (1 to 10)
04 LON participant number

1. Press ⓘ.

2. Scan maintenance messages with ⊕ or ⊖.

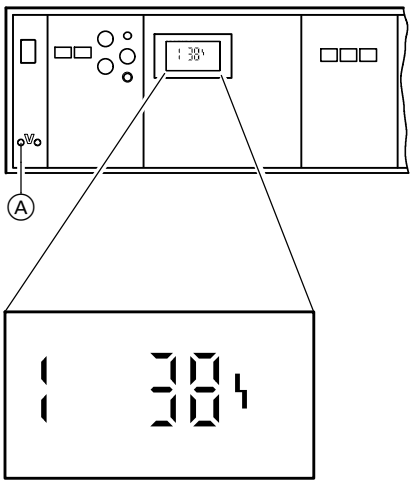
3. Press OK.
   Display reads Acknowledge: Yes
   Confirm with OK.
   The maintenance message in the display is cleared.

   Please note:
   An acknowledged maintenance message can be re-displayed by pressing OK (approx. 3 seconds).

4. Acknowledge the maintenance display at the appropriate Vitotronic 100, GC1 see page 89.

Please note:
If coding address 24 on Vitotronic 100, GC1 is not reset after the maintenance has been carried out, Maintenace will be re-displayed the following Monday morning at both control units

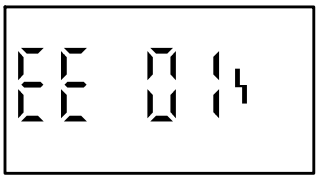
Faults displayed at the programming unit



1 Consecutive fault number
38 Fault code
ϟ Fault symbol

Red fault lamp Ⓐ flashes for all faults. A fault code flashes in the display if a fault message has been issued (see page 96).

Call up further fault codes with ⊕ or ⊖.
A fault can be acknowledged with OK. The fault message in the display will be hidden, but red fault lamp Ⓐ continues to flash. A central fault messaging device connected to plug 50 will be switched OFF.
The fault message will be re-displayed if an acknowledged fault message has not been removed by the following morning.



EE External fault/maintenance
01 LON participant number of the device with a fault/maintenance requirement
ϟ Fault symbol

Vitotronic 100 as fault manager
Any fault or maintenance message on another LON participant is shown on the left hand side of the display.

Calling up acknowledged fault messages
Press OK for approx. 3 seconds. The fault will then be displayed.
Select the acknowledged fault with ⊕ or ⊖.

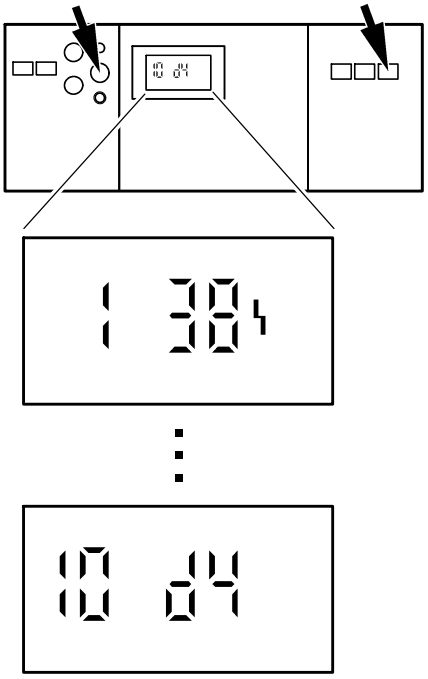
Faults displayed at the programming unit (cont.)

Fault code	System characteristics	Cause	Remedy
0F	Control mode	Maintenance 0F is only displayed in the error history	Carry out maintenance ***Please note:*** *After maintenance, set coding 24 : 0.*
30	Burner is started and stopped via a adjustable high limit	Short circuit Boiler temperature sensor	Check boiler temperature sensor (see page 122)
38		Open circuit Boiler temperature sensor	
60	Boiler with maximum temperature, no output reduction; return control to	Short circuit Temperature sensor 17 A	Check temperature sensor (see page 123). Set coding 4A : 0, if **no** sensor is connected.
68		Open circuit Temperature sensor 17 A	
70	Shunt pump constantly ON	Short circuit Temperature sensor 17 B	Check temperature sensor (see page 123). Set coding 4b : 0, if **no** sensor is connected.
78		Open circuit Temperature sensor 17 B	
AA	Control mode	Therm-Control configuration error Plug 17 A of Therm-Control temperature sensor not plugged-in	Insert plug 17 A coding 0d : 0 must be set for Vitocrossal
AC	Control mode	Return temperature control configuration error: Coding OC : 1 has been set, but plug 17 A not plugged-in and/or coding 4E : 0 not set	Insert plug 17 A and check coding
Ad		Isolation valve configuration error: Coding OC : 2, OC : 3 or OC : 4 set, and coding 4E : 1 not set	With isolation valve: Set coding 4E : 0 Without isolation valve: Set coding 0C : 0 or 0C : 1
b0		Short circuit Flue gas temperature sensor	Check flue gas temperature sensor (see page 124)
b1		Communication error – programming unit	Check connections and replace programming unit if necessary
b4	Emissions test mode	Internal electronics fault	Check Printed Circuit Board or replace if necessary
b5	Control mode		
b6	Constant mode	Invalid hardware recognised	Check the control software circuit board and confirm the coding address: - Enter coding 2 (see page 140 for instructions). - Change code 8A to 176. - Confirm coding 92:160
b7	Boiler is regulated by adjustable high limit	Internal error – boiler coding card	Plug in boiler coding card or replace if faulty (see page 30)

Faults displayed at the programming unit (cont.)

Fault code	System characteristics	Cause	Remedy
68	Control mode	Flue gas temperature sensor open circuit	Check flue gas temperature sensor (see page 124)
6F		Incorrect LON communication module	Replace communication module (see page 121)
C1	Boiler cools down	External safety device	Check connection on plug 150 and external safety equipment
C4	Control mode	Input Module 0 to 10V incorrectly connected	Connect Input Module 0 to 10 V to Vitotronic 300-K, MW1S and set coding 9d : 0 on Vitotronic 100
C8	Boiler cools down	Error Low water cut off device	Check water level of system; reset low water cut-off device (see page 39)
C9		Error Maximum pressure limiter	Check system pressure; reset maximum pressure limiter
CA	Boiler cools down	Error Minimum or maximum pressure limiter 2	Check system pressure; reset minimum or maximum pressure limiter
Cb	Boiler cools down	Error External fixed high limit or temperature limiter	Check system temperature; reset fixed high limit (see page 31)
CE	Control mode	Communication error Plug-in adaptor for external safety equipment	Check plug-in adaptor for external safety equipment and connecting cable Without plug-in adaptor: Set coding 94 : 0
CF		Error LON communication module	Replace communication module (see page 121)
d1	Boiler cools down	Burner fault	Check burner
d4		Fixed high limit has responded or fuse F2 has blown	Check fixed high limit or burner, burner loop and fuse F2 (see page 31)
d6	Control mode	Fault in plug-in adaptor for external safety equipment: ■ to DE1	Check electrical connections on DE1 to DE3
d7		■ to DE2	
d8		■ to DE3	

Viewing fault codes from the fault memory (error history)



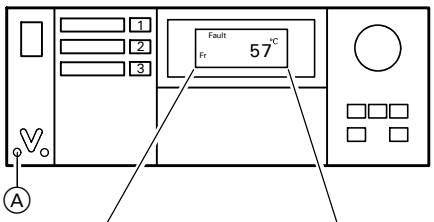
1. Press ☰/🚿 and OK simultaneously for approx. 2 seconds.
2. Call up the individual fault codes with ⊕ or ⊖.

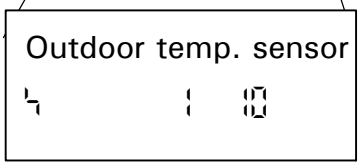
Order of fault codes occurred	Fault code
1	Last fault code
⋮	⋮
10	10th last fault code

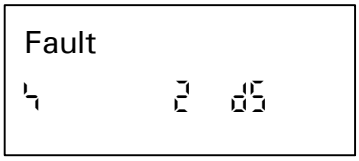
All saved fault codes can be deleted with ⧓.

3. Press OK.

Faults displayed at the programming unit







ϟ Fault symbol
2 Consecutive number (1 to 10)
05 Fault code (for explanations see from page 100)

Red fault indicator Ⓐ flashes for all faults.

If a fault message is recognized, the display flashes Fault.

Finding the fault

1. Press ⓘ.

2. Call up further fault codes with ⊕ or ⊖.
The fault can be acknowledged with OK. The fault message in the display will be hidden, but red fault lamp Ⓐ continues to flash. A new fault message will be displayed if an acknowledged fault is not removed by the following morning.
A central fault messaging device connected to plug 50 will be activated.

Faults displayed at the programming unit (cont.)

Fault display in plain text
- Ext. fault
- Outdoor temperature sensor
- Supply sensor
- DHW tank sensor (1 or 2; display only, if a second DHW tank temperature sensor is connected)
- Sensor 17A
- Sensor 17B
- Room temperature sensor
- Participant fault (display only if control unit is programmed as fault manager)

Calling up acknowledged fault messages
Press OK for approx. 3 seconds.
The fault will then be displayed.
Select the acknowledged fault with ⊕ or ⊖.

Fault code	System characteristics	Cause	Remedy
0F	Control mode	Maintenance "0F" is only displayed in error history	Carry out maintenance ***Please note:*** *After maintenance, set coding 24 : 0*
10	Activates after 0 °C / 32 °F outdoor temperature	Short circuit Outdoor temperature sensor	Check outdoor temperature sensor (see page 127)
18		Open circuit Outdoor temperature sensor	
20	Vitotronic 300-K, MW1S controls in a stand-alone manner w/o strap-on sensor (supply temperature may not be high enough)	Short circuit Strap-on temperature sensor	Check strap-on temperature sensor (see page 126)
28		Open circuit Strap-on temperature sensor	

Faults displayed at the programming unit (cont.)

Fault code	System characteristics	Cause	Remedy
40	Mixing valve closes	Short circuit Strap-on temperature sensor of mixing valve circuit M2	Check strap-on temperature sensor (see page 126)
44		Short circuit Strap-on temperature sensor of mixing valve circuit M3	
48		Open circuit Strap-on temperature sensor of mixing valve circuit M2	
4C		Open circuit Strap-on temperature sensor of mixing valve circuit M3	
50	DHW tank heating pump ON: Set boiler temperature = set DHW tank temperature, priority is cancelled or With DHW tank heating system: DHW tank heating is started and stopped by DHW tank temperature sensor 2	Short circuit DHW tank temperature sensor 1	Check DHW tank temperature sensor (see page 125)
51	With DHW tank heating system: DHW tank heating is started and stopped by DHW tank temperature sensor 1	Short circuit DHW tank temperature sensor 2	Check DHW tank temperature sensor (see page 125)
58	DHW pump ON: Set boiler temperature = set DHW tank temperature, priority is cancelled or With DHW heating: DHW heating is started and stopped by DHW tank temperature sensor 2	Open circuit DHW tank temperature sensor 1	
59	With DHW heating: DHW heating is started and stopped by DHW tank temperature sensor 1	Open circuit DHW tank temperature sensor 2	Check DHW tank temperature sensor (see page 125)
60	Boiler with maximum temperature, no output reduction; return control to	Short circuit Temperature sensor 17 A	Check temperature sensor (see page 126), Set coding 4A : 0, if no sensor is connected.
68		Open circuit Temperature sensor 17 A	

Faults displayed at the programming unit (cont.)

Fault code	System characteristics	Cause	Remedy
70	Shunt pump constantly ON With DHW heating: Mixing valve primary circuit closed, no DHW heating	Short circuit Temperature sensor 17 B	Check temperature sensor (see page 126), Set coding 4b : 0, if no sensor is connected
78		Open circuit Temperature sensor 17 B	
92	Control mode Only solar control unit fault codes will be displayed	Short circuit Collector temperature sensor	Check solar control unit sensor
93		Short circuit Collector return temperature sensor	
94		Short circuit DHW tank temperature sensor	
9A		Open circuit Collector temperature sensor	
9b		Open circuit Collector return temperature sensor	
9C		Open circuit DHW tank temperature sensor	
9F		Error Solar control unit; displayed if an error without fault code occurs at solar control unit	Check solar control unit
Ab	Controlled operation, possibly DHW tank cold	DHW heating configuration error: Coding 55 : 3 has been set, but 17 B not plugged-in and/or coding 4C : 1 and 4E : 1 not set	Insert plug 17 B and check coding
AC	Control mode	Return temperature control configuration error: Coding 0C : 1 has been set, but 17 A not plugged-in and/or coding 4E : 0 not set	Insert plug 17 A and check coding
b1		Communication error Programming unit	Check connections and replace programming unit if necessary
b4	Emissions test mode	Internal electronics fault	Check Printed Circuit Board and replace if necessary
b5	Control mode		
b6	Constant mode	Invalid hardware recognised	Check the control software circuit board and confirm the coding address: - Enter coding 2 (see page 151 for instructions). - Change code 8A to 176. - Confirm coding 92:184
bA	Mixing valve closed	Communication error Mixing valve extension Printed Circuit Board	Check Printed Circuit Board and replace if necessary

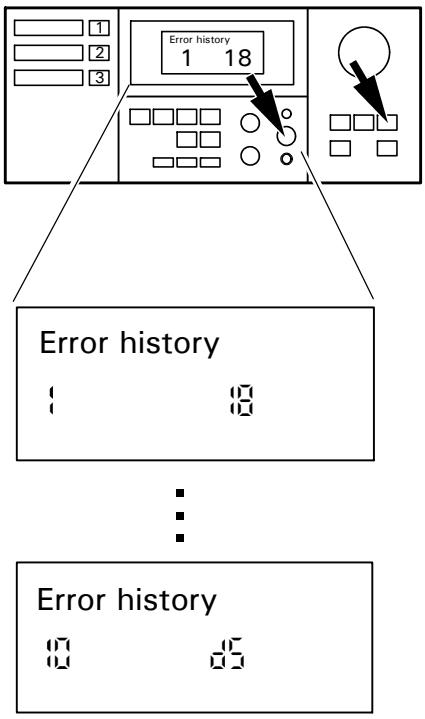
Faults displayed at the programming unit (cont.)

Fault code	System characteristics	Cause	Remedy
bC	Control mode without remote control	Communication error Vitotrol remote control, System circuit A1	Check connections, cable, coding address A0 and remote control DIP switches (see page 137 and 154)
bd		Communication error Vitotrol remote control, Mixing valve circuit M2	
bE		Communication error Vitotrol remote control, Mixing valve circuit M3	
bF	Control mode	Incorrect LON communication module	Replace communication module
C2		Open circuit KM BUS to solar control unit	Check KM BUS cable and solar control unit Without solar control unit: Set coding 54 : 0
C4		Faulty communication with Input Module 0 to 10 V	Check connections and cables/leads; replace Input Module, if required (see page 137) Without Input Module: Set coding 9d : 0
CE	Control mode	Communication error Plug-in adaptor for external safety equipment	Check plug-in adaptor for external safety equipment and cables/leads Without plug-in adaptor: Set coding 94 : 0
CF		Error LON communication module	Replace communication module
d5	Boiler drives up to electronic maximum limit	Boiler does not log in at cascade	Check communication (e.g. participant check), cables to Vitotronic 100 and coding (see from page 73)
d6	Control mode	Fault at DE1 in plug-in adaptor for external safety equipment ■ to DE1	Check electrical connections on DE1 to DE3
d7		■ to DE2	
d8		■ to DE3	

Faults displayed at the programming unit (cont.)

Fault code	System characteristics	Cause	Remedy
dA	Control mode without room influence	Short circuit Room temperature sensor, System circuit A1	Check room temperature sensor (see page 139) and DIP switch on Vitotrol (see page 130 and 132)
db		Short circuit Room temperature sensor, Mixing valve circuit M2	
dC		Short circuit Room temperature sensor, Mixing valve circuit M3	
dd		Open circuit Room temperature sensor, System circuit A1	
dE		Open circuit Room temperature sensor, Mixing valve circuit M2	
dF		Open circuit Room temperature sensor, Mixing valve circuit M3	

Viewing fault codes from the fault memory (error history)



1. Press ⌨ and (OK) simultaneously for approx. 2 seconds.
2. Call up the individual fault codes with ⊕ or ⊖.

Order of fault codes occurred	Fault code
1	Last fault code
⋮	⋮
10	10th last fault code

All saved fault codes can be deleted with ⌫.

3. Press (OK).

Boiler temperature control

Brief description

The boiler water temperature is regulated by controlling a two stage or modulating burner.
The set boiler water temperature set-point is controlled by Vitotronic 300-K, MW1S.

Coding addresses which influence the boiler temperature control
02 to 06, 08 to 0b, 13 to 1C
For a description, see the coding overview.

Functions

The boiler water temperature is monitored by three sensors separately, which are inserted into a multiple sensor well:
- Fixed high limit (STB) (liquid expansion)
- Adjustable high limit TR (liquid expansion)
- Boiler temperature sensor KTS (changes in resistance PT500)

Control range limits top
- Fixed high limit STB 120 °C / 248 °F, adjustable to 110 or 100 °C/ 230 or 212 °F
- Thermostat TR 95 °C / 203 °F, adjustable to 87, 100 or 110 °C / 187, 212 or 230 °F.
- Electronic maximum limiter
  Setting range: 20 to 127 °C / 68 to 261 °F
  The maximum boiler water temperature limit can be adjusted via coding address 06.

Lower control range limits
In standard mode and when frost protection is active, the control unit regulates the boiler water temperature in accordance with the respective boiler.

Control sequence

Boiler goes cold
(set value –2 K)
The burner is activated if the oiler termperature is 2 °C / 3.6 °F below the calculated set point temperature. The burner may be delayed a few minutes depending on the connected auxilliary equipment and the fuel type.

Boiler heats up
The burner shutdown point is determined by the switch-off differential (coding address 13).

Cascade control unit

Brief description

The supply temperature is regulated by starting or stopping the burner or by starting/stopping individual burner stages.
Depending on the type of control

- the boilers will be controlled to the set boiler water temperature determined by the cascade control (stand-alone type of control)
  or
- the cascade controls the boilers by pre-setting an individual boiler output (sequential control strategy).

Subject to the system design, you may select between one gross calorific strategy and two net calorific strategies.
The boiler sequence (see page 112) can be determined via coding 2 and the boiler sequence selection.

Coding addresses which influence the cascade control
35 to 3F, 41 to 4A
For a description, see the coding overview.

Set supply temperature

The set supply temperature is determined from

- the supply temperature setpoint values of system circuit A1 and mixing valve circuits M2 and M3,
- the set supply temperature values of additional heating circuit loads (e.g. Vitotronic 200-H),
- the set DHW temperature and
- external demands (e.g. the set supply temperature required by coding address 9b or via the Input Module 0 to 10 V).

Upper control limit
Electronic maximum system supply temperature limit.
Setting range: 20 to 127 °C / 68 to 261 °F.
The maximum supply temperature limit can be adjusted via coding address 37.
This value must be set no higher than the lowest value of coding address 06 of all connected Vitotronic 100, GC1.

Lower control range limit
Electronic minimum system supply temperature limit
Setting range: 20 to 127 °C / 68 to 261 °F.
The minimum supply temperature limit can be adjusted via coding address 36.

Cascade control (cont.)

Control sequence

Stand-alone (Autonomous) type of control sequence

Parallel boiler arrangement
(coding 3b : 0 without supply temperature sensor or
coding 3b : 1 with supply temperature sensor)
With the stand-alone type of control in a parallel hydraulic boiler arrangement, the cascade control unit defaults the set boiler water temperature for all active boilers.
Every Vitotronic 100, GC1 individually regulates the defaulted set temperature.

Boilers arranged in series
(coding 3b : 2 without supply temperature sensor or
coding 3b : 3 with supply temperature sensor)
With the stand-alone type of control in a series hydraulic boiler arrangement, the cascade control unit pre-sets the set boiler water temperature for all active boilers.
Difference to parallel arrangement:
When the lead boiler (condensing boiler) does not achieve the required boiler water temperature, it will only act to control the return temperature
of all downstream boilers.
In a series boiler arrangement, only the net calorific strategy 2 (see page 110) is useful. The conventional boiler is started late and is also shut down late.

The control sequence is subject to the start-up and shutdown criteria set by the control strategy (coding address 3C):
- Gross calorific strategy
- Net calorific strategy 1
- Net calorific strategy 2.

With supply temperature sensor:
The control deviation is calculated from the set supply temperature and the actual supply temperature to determine the start-up and shutdown criteria.

Without supply temperature sensor:
The control deviation is calculated from the set boiler water temperature and estimated average actual boiler water temperature of the active boiler to determine start-up and shutdown criteria. Only those boilers are taken into consideration whose isolation valve is not closed.

Cascade control (cont.)

Sequential type of control sequence
(coding 3b : 4)

With the sequential type of control, the cascade control unit regulates to the required set supply temperature by pre-setting the output for each individual boiler. The lead boiler can be operated in modulating mode. All other boilers are operated in two stages via a defaulted output (incl. modulating burners).

The control sequence is subject to the start-up and shutdown criteria set by the control strategy (coding address 3C):
- Gross calorific strategy
- Net calorific strategy 1
- Net calorific strategy 2.

With supply temperature sensor:
The control deviation is calculated from the set supply temperature and the actual supply temperature to determine the start-up and shutdown criteria.

Without supply temperature sensor:
The control deviation is calculated from the set boiler water temperature and the estimated average actual boiler water temperature of the active boiler to determine the start-up and shutdown criteria. Only those boilers are taken into consideration whose isolation valve is not closed.

Condensing strategy

It is the aim of the gross calorific strategy to operate as many boilers as possible at the lowest output level.

Advantages:
- Optimum utilization of the condensing effect (as many boilers active as possible)
- Long burner operating times

Start-up criteria
The boiler is started via an output statement (coding 3d : 1).
An additional boiler will be started, when the currently required output can also be achieved by the currently active boiler plus the next boiler in the boiler sequence (see page 112).

Shutdown criteria
The boiler is shut down via a shutdown integral. The shutdown criteria is met when the shutdown integral exceeds a limit set via coding address 46, and the boiler started last will be shut down.

Cascade control (cont.)

Net calorific strategy 1

Conventional boilers are preferably operated at their upper output range, to reliably prevent the formation of condensate due to low return temperatures.
With net calorific strategy 1, an additional boiler will only be started if the maximum output of all currently active burners is insufficient to achieve the set supply temperature.
A boiler will be shut down, when the remaining boiler(s) can achieve the required output on its/their own.

Benefit:
As few boilers as possible are active.

Start-up criteria
The boiler is started via a start-up integral.
The start-up criteria is met when the start-up integral exceeds a limit set via coding address 45, and the next boiler in the sequence will be started (see page 112).

Shutdown criteria
The boiler is shut down via an output statement (coding 3d : 1).
A boiler is shut down when the currently required output can be achieved without the boiler which was started last.

Net calorific strategy 2

With the net calorific strategy 2, an additional boiler will only be started if the maximum output of all currently active burners is insufficient to achieve the set supply temperature.
A boiler will be shut down if the burner was returned to its minimum output because of a large negative control deviation, and the output is then still too high.

Benefit:
Long burner operating times

Start-up criteria
The boiler is started via a start-up integral.
The start-up criteria is met when the start-up integral exceeds a limit set via coding address 45, and the next boiler in the sequence will be started (see page 112).

Shutdown criteria
The boiler is shut down via a shutdown integral. The shutdown criteria is met when the shutdown integral exceeds a limit set via coding address 46, and the boiler started last will be shut down.

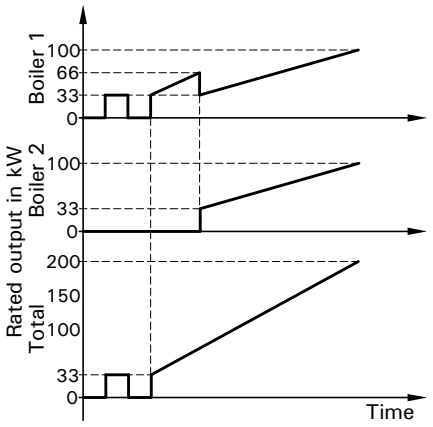
Cascade control (cont.)

Control strategy example

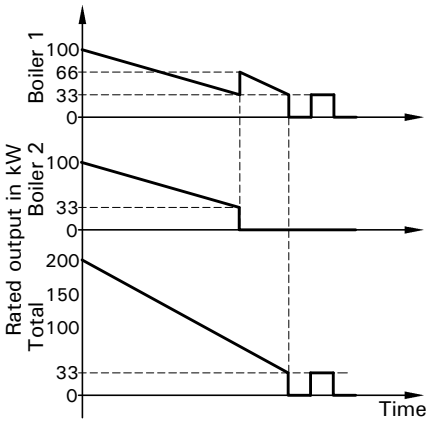
Two boiler system with modulating burner:
- Boiler 1: 100 kW rated output (basic load adjusted to 33 %, see page 78)
- Boiler 2: 100 kW rated output (basic load adjusted to 33 %, see page 78)

Gross calorific strategy (coding 3C : 0)

Start-up

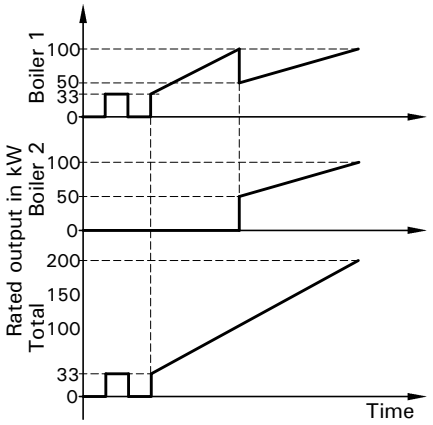


Switching OFF

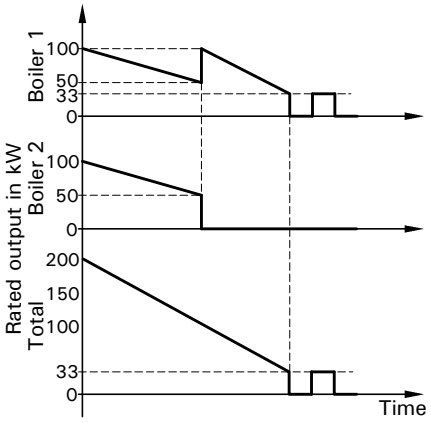


Net calorific strategy 1 (coding 3C : 1)

Start-up



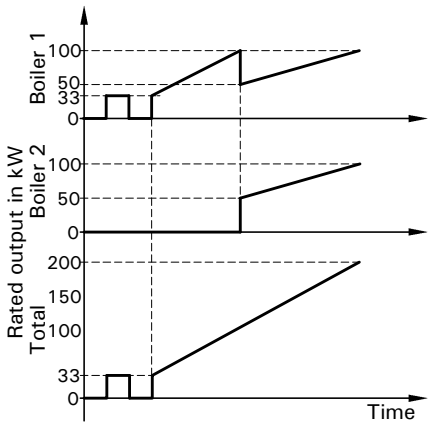
Switching OFF



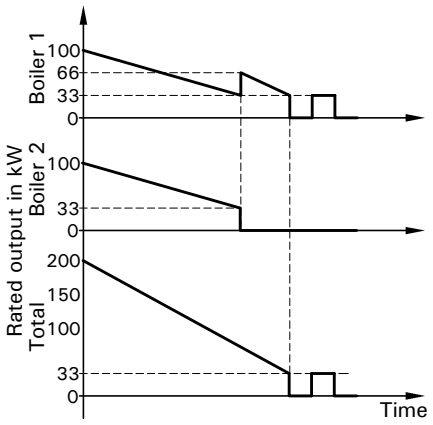
Cascade control (cont.)

Net calorific strategy 2 (coding 3C : 2)

Start-up



Switching OFF



Boiler sequence

The boiler sequence is determined by the boiler sequence selection and the following coding addresses (see also page 152):

38 Changing the lead boiler and the boiler sequence
- 38 : 1 Every 1st day of the month, the boiler with the burner which has operated for the shortest number of hours becomes lead boiler
- 38 : 2 After 200 to 20000 run hours, the boiler with the next higher number (coding address 07 of Vitotronic 100) becomes lead boiler

39 Boiler 1, 2, 3 or 4 permanent lead boiler

3A Boiler 1, 2, 3 or 4 permanent last boiler

41 ECO threshold boiler 1

42 ECO threshold boiler 2

43 ECO threshold boiler 3

44 ECO threshold boiler 4

Via the ECO threshold, every boiler can be blocked or enabled subject to the outdoor temperature. The ECO control becomes disabled, if the boiler is required to achieve the set supply temperature, when enabled boilers have failed. At least the lead boiler remains active if all boilers in a system are blocked by the ECO control.

Heating circuit control

Brief description

The control unit provides control circuits for one high temperature (boiler) circuit and two mixing valve circuits.
The set supply temperature of every heating circuit results from the outdoor temperature, the set room temperature, the operating mode and the heating curve.
The supply temperature of the system circuit corresponds to the common system supply temperature.
The supply temperature of the mixing valve circuits is regulated by the stepped opening or closing of the mixing valves.

The mixing motor control changes the actuating and pause times subject to the control difference (control deviation).

Coding addresses which influence the heating circuit control
9F, A2 to A7, A9, C4 to C7, C8, F1, F2.
For a description, see the coding overview.

Functions

The high temperature (boiler) circuit is subject to the boiler water temperature and its control range limits.
The heating circuit pump is the controlling element. The mixing valve circuit supply temperature is recorded by the supply temperature sensor.

Time program
The control unit timer changes in accordance with the times programmed in the room heating and DHW heating program between the heating with normal room temperature and heating with reduced room temperature operating modes.
Every operating mode has its own set level.

Outdoor temperature
A heating curve must be set up for matching the control unit to the building and the heating system. The heating curve characteristics determine the set boiler water temperature subject to outdoor temperature. An average outdoor temperature (dampened) is used for control purposes. This comprises the actual and the adjusted outdoor temperature.

Heating circuit control (cont.)

Domestic hot water temperature

- With priority control:
  The set supply temperature will be set to 0 °C / 32 °F during DHW heating.
  The mixing valve closes, and the heating circuit pumps are switched OFF.
- Without priority control:
  The heating circuit control unit continues to operate with the same set value.
- With modulating DHW priority (only in conjunction with a mixing valve circuit):
  The heating circuit pump remains switched ON. The set supply temperature of the heating circuits will be reduced, for as long as the set boiler water temperature has not been reached during DHW tank heating. The set supply temperature is subject to the difference between the set and the actual boiler water temperature, the outdoor temperature, the heating curve slope and coding address A2.

Room temperature

in conjunction with remote control and room temperature input (observe coding address b0).

Compared to the outdoor temperature, the room temperature has a greater influence on the common set supply temperature. This influence may be adjusted via coding address b2.
In conjunction with the mixing valve circuit:
For control differences (actual value deviation) above 2 °C / 3.6 °F room temperature, the influence can be increased again (via coding address b6, quick heat-up/quick setback).
Quick heat-up:
The set room temperature must be raised by a minimum of 2 °C / 3.6 °F by:

- Pressing party button
- Changing from heating with reduced temperature to heating with normal temperature
- Start-up optimisation

Quick heat-up will stop when the set room temperature has been reached.

Quick setback:
The set room temperature must be reduced by a minimum of 2 °C / 3.6 °F by:

- Pressing economy button
- Changing from room heating with normal temperature to heating with reduced temperature
- Shutdown optimisation

Quick setback will stop when the set room temperature has been reached.

Heating circuit pump logic (economy circuit)

The heating circuit pump is switched OFF (set supply temperature set to 0 °C/ 32 °F), when the outdoor temperature exceeds the value selected via coding address A5.

Heating circuit control (cont.)

Extended economy circuit
The heating circuit pump is switched OFF, and the set supply temperature is set to 0 °C / 32 °F, if

- the outdoor temperature exceeds the value selected via coding address A6
- the set room temperature is reduced via coding address A9
- in conjunction with the mixing valve circuit:
  the mixing valve has been closed for 12 minutes (mixing economy function, coding address A7)

Slab curing function
(only in conjunction with a mixing valve circuit)

Please note:
Four different temperature profiles can be selected for drying the slab. These profiles are activated via coding address F1.

When the slab curing function is activated, the heating circuit pump of the mixing valve circuit is switched ON, and the supply temperature will be held at the selected profile. After completion (30 days), the mixing valve circuit will be regulated automatically via the set parameters.

System dynamics – mixing valve circuit
(only in conjunction with a mixing valve circuit)

You can influence the control characteristics of the mixing valve via coding address C4.

Central operation
Central operation for all downstream heating circuits can be programmed via coding address 7A.
The heating and holiday program then applies to all heating circuits in the system.
The programming unit of the other heating circuits displays **central control** when the heating program and holiday program buttons are activated.
Any set holiday programs in the heating circuit programming units will be deleted.

Party and economy buttons on **all** control units are without effect.

Frost protection
When the outdoor temperature falls below +1 °C / 34 °F, a supply temperature of at least 10 °C / 50 °F will be safeguarded.
For changes see coding address A3, variable frost limit.

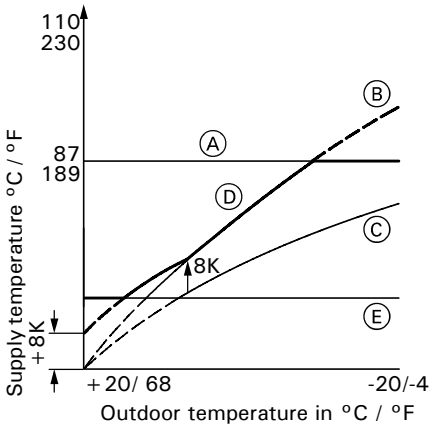
Heating circuit control (cont.)

Supply temperature control
Differential temperature:
The differential temperature may be adjusted via coding address 9F; factory supplied setting 8 °C / 15 °F .

The differential temperature is that minimum temperature differential by which the common supply temperature should be higher than the currently required supply temperature of the mixing valve circuit.

- System with only one mixing valve circuit:
  The common set supply temperature will be automatically held 8 °C / 15 °F above the set supply temperature of the mixing valve circuits.

- System with high temperature (boiler) circuits and mixing valve circuits:
  The common set supply temperature operates in accordance with its own heating curve. The differential temperature of 8 K towards the set supply temperature of the mixing valve circuits is set up at the factory.



Ⓐ Max. common supply temperature
Ⓑ Slope = 1.8 high temperature (boiler) circuit
Ⓒ Slope = 1.2 mixing valve circuit
Ⓓ Common supply temperature (at a differential temperature = 8 °C/ 15°F)
Ⓔ Minimum common supply temperature

Upper control limit
Electronic maximum limit
Setting range: 1 to 127 °C / 34 to 261 °F
Changes via coding address C6.

Please note:
The maximum limit is no replacement for the underfloor heating system temperature limiter.

Lower control range limit
Electronic minimum limit
Setting range: 1 to 127 °C / 34 to 261 °F
Changes via coding address C5 (only effective in standard mode)

Control sequence

Mixing valve circuit
The mixing valve motor will not be activated within the neutral zone (±1 °C / 2 °F).

Supply temperature falls
(set value –1 °C / -2 °F)
The mixing valve motor receives the open signal.
The signal duration lengthens with an increasing control differential.
The duration of pauses reduces with an increasing control differential.

Supply temperature rises
(set value +1 °C / 2 °F)
The mixing valve motor receives the close signal.
The signal duration lengthens with an increasing control differential.
The duration of pauses reduces with an increasing control differential.

DHW tank temperature control

Brief description

The DHW tank control logic is a set-point control. It is the result of starting and stopping the DHW pump. The switching differential is ±2.5 °C / 4.5 °F.

During DHW tank heating, a constant boiler supply temperature will be set (20 °C / 36 °F higher than the set DHW tank temperature, adjustable via coding address 60) and space heating is switched OFF (optional DHW tank priority).

Coding addresses which influence the DHW tank control
54 to 75, 7F, A2.
For a description, see the coding overview.

Functions

Time program
An automatic program or an individual time program may be selected for DHW heating and the control of the DHW recirculation pump.
Compared with the space heating circuit's heat-up phase, DHW heating in automatic mode starts 30 minutes earlier.
The individual time program enables up to four switching periods per day to be set via the time switch to control the DHW heating/heating and the DHW recirculation pump.
Any DHW tank heating sequence will be completed, independent of the time program.

In conjunction with coding address 7F
7F : 1 Detached house:
- Automatic mode
  For systems with two or three space heating circuits, the heating times for the first of the existing heating circuits will be applied.
- Individual time program
  The switching times for DHW heating and the DHW recirculation pump have the same effect on all heating circuits.

7F : 0 Apartment building:
- Automatic mode
  For systems with two or three heating circuits, the heating times for the respective heating circuit will be applied.
- Individual time program
  The switching times for DHW heating can be adjusted separately for each heating circuit.

DHW priority
- With DHW priority (coding A2 : 2):
  The set supply temperature will be set to 0 °C / 32 °F while the DHW tank is being heated.
  The mixing valve closes, and the heating circuit pumps are switched OFF.
- With DHW priority:
  The heating circuit control unit continues to operate with the same set value.

Frost protection
The DHW tank will be heated to 20 °C/ 68 °F, if the DHW temperature falls below 5 °C / 41 °F.

Auxiliary functions – DHW heating
This function is activated by providing a second set DHW temperature via coding address 58 and activating the 4th DHW phase for DHW heating.

Set DHW temperature
The set DHW temperature can be adjusted between 10 and 60 °C / 50 and 140 °F. The set range can be expanded to 95 °C / 203 °F via coding address 56.
You can select the set DHW temperature at the programming unit of the control and at every Vitotrol 300 remote control unit (if installed).
You can determine the allocation to individual heating circuits via coding address 66.

DHW recirculation pump
It delivers hot water to the draw-off points at adjustable times. Up to four control periods can be set at the timer.

Auxiliary circuits
The DHW heating can be disabled or enabled by changing over the heating program.

System with DHW tank heating system
The above functions also apply in conjunction with calorifiers.
Set the following codings
4C : 1, 4E : 1, 55 : 3.
For a description, see the coding overview.

Systems with Vitosolic
A third DHW temperature set-point can be programmed via coding address 67. Reloading suppression will be active below the set temperature. The DHW tank is heated only by the solar heating system.

DHW tank temperature control (cont.)

Control sequence

Pump delay

- The DHW pump continuous operation (coding 62 : 10) after the DHW tank heating, until
  - the difference between the boiler water and the DHW temperature is less than 7 °C / 13 °F or
  - the common supply temperature is achieved based on outdoor reset calculations or
  - the actual temperature is 5 °C / 9 °F higher than the set DHW temperature or
  - the maximum time delay (adjustable via coding address 62) has been reached.
- Without the pump time-delay for DHW tank heating (coding 62 : 0)

Coding 55 : 0:
DHW heating

The DHW tank goes cold
(set value –2.5 °C / 4.5 °F, adjustable via coding address 59)
The common supply temperature is adjusted 20 °C / 36 °F higher than the set DHW (adjustable via coding address 60).

The DHW tank is hot
(set value +2.5 °C / 4.5 °F)
The common set supply temperature is returned to the weather-compensated value.

Coding 55 : 1:
Adaptive DHW tank heating

With adaptive DHW tank heating, the speed of the temperature rise during DHW heating is taken into account. Also taken into account is the question of whether the boiler will be required to supply heat after the DHW tank has been heated or whether residual boiler heat should be transferred to the DHW tank.
Accordingly, the control unit determines the burner and DHW recirculation pump shutdown point to prevent the set DHW temperature being substantially exceeded after the DHW tank has been heated.

Coding 55 : 2:
DHW tank temperature control with 2 DHW tank temperature sensors

The 1st DHW tank temperature sensor enables the DHW pump, and is evaluated for stop conditions during the pump run-on time. The 2nd DHW tank temperature sensor (inside the cold water inlet) is designed to prematurely start DHW tank heating when large quantities of DHW are drawn off as well as to prematurely stop DHW tank heating if no DHW is drawn.

Coding 55 : 3:
DHW tank control – DHW heating (for DHW heating systems only)
The DHW tank goes cold
(set value –2.5 °C / -4.5 °F, adjustable via coding address 59),

- The common set supply temperature is adjusted 20 °C / 36 °F higher than the set DHW temperature (adjustable via coding address 60).
- The primary DHW pump is switched ON.
- The three-way mixing valve opens and then regulates to the defaulted set value.
- The DHW pump cycles (short term ON and OFF) until the set supply temperature has been reached, then it runs constantly. If, during DHW tank heating, the actual value stays below the required set supply temperature, then the DHW pump will temporarily cycle again.

The DHW tank is hot
(1st DHW tank temperature sensor:
Actual value ≥ set value
and
2nd DHW tank temperature sensor:
Actual value > set value –1.5 °C / -2.7 °F)

- the common set supply temperature is returned to the weather-compensated value;
- the DHW pump
  - is immediately switched OFF, if the three-way mixing valve is open or
  - is switched OFF after run-on time adjustable via coding 62.

Components from the parts list

Power supply module A1

Cascade ekectronics module A2

With PCB.
Microprocessor with software

When replacing the Printed Circuit Board:

1. Record the coding and adjustments made at the control unit.
2. Replace the Printed Circuit Board.
3. Set coding 8A : 176, and coding address 92 to 92 : 160.

Power module A3

Extension module

Front panel with heating circuit selector keys

Display and selection of the heating circuit.

Programming unit

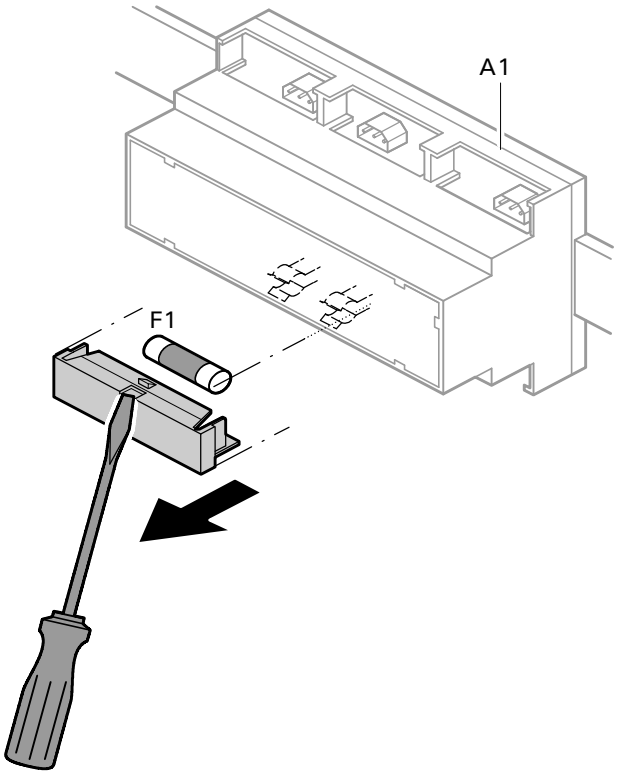
The programming unit is set into the front door of the control panel.
Setting the:

- Heating program
- Set values
- Switching times
- Heating curve (slope and shift)
- Date
- Time
- Economy and party mode

Displaying:

- Temperatures
- Operating conditions
- Faults

Fuse

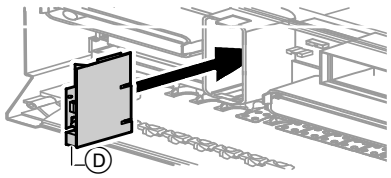


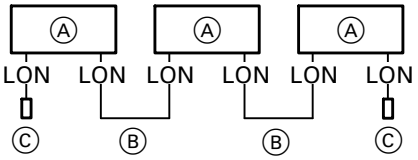
F1 T4 A, 250 V,
max. power loss x 1.6 W
A1 Power supply module

Components from the parts list

LON communication module

Plug in the LON communication module into the control unit. The communication interruption will be displayed.





Ⓐ Control unit or Vitocom 300
Ⓑ Interconnecting cable for data exchange between the control units, part no. 7143 495
Ⓒ Terminators, (standard delivery – Vitotronic 300-K, MW1S)
Ⓓ Slots for Ⓑ and Ⓒ

Fixed high limit

- In the factory setting set to 120 °C / 248 °F , adjustable to 110 or 99 °C / 230 °C or 212 °F (see page 32)
- Electromechanical temperature switch according to the liquid expansion principle; with lockout
- Intrinsically safe; also lockout in case of capillary tube leaks or ambient temperatures below –10 °C / 14 °F
- Limits the boiler water temperature to the maximum permissible value by shutdown and manual reset
- Central mounting M 10, capillary 3600 mm / 142 inches long
  Probe ∅ 3 mm / 0.1 inches, 180 mm/ 7 inches long
- Tests:
  effectiveness via test button

Test button

For testing the fixed high limit.
For a description, see page 72.

Adjustable high limit

- In the factory setting set to 95 °C / 203 °F, adjustable to 100 or 110 °C / 212 or 230 °F (see page 32)

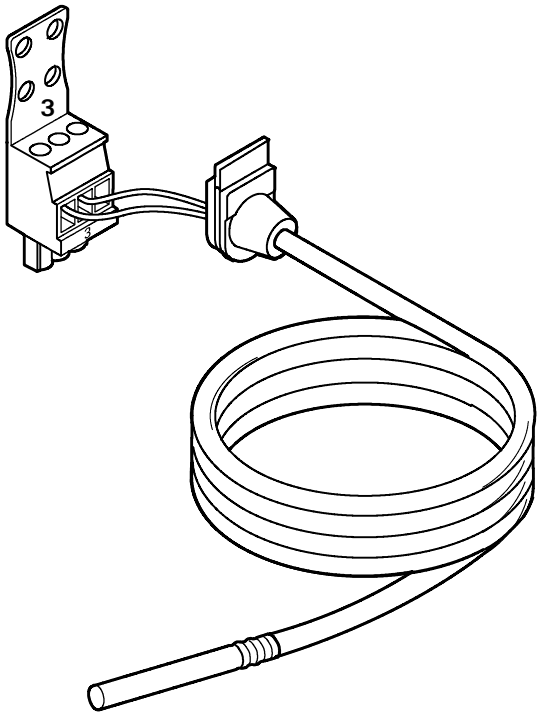
IMPORTANT

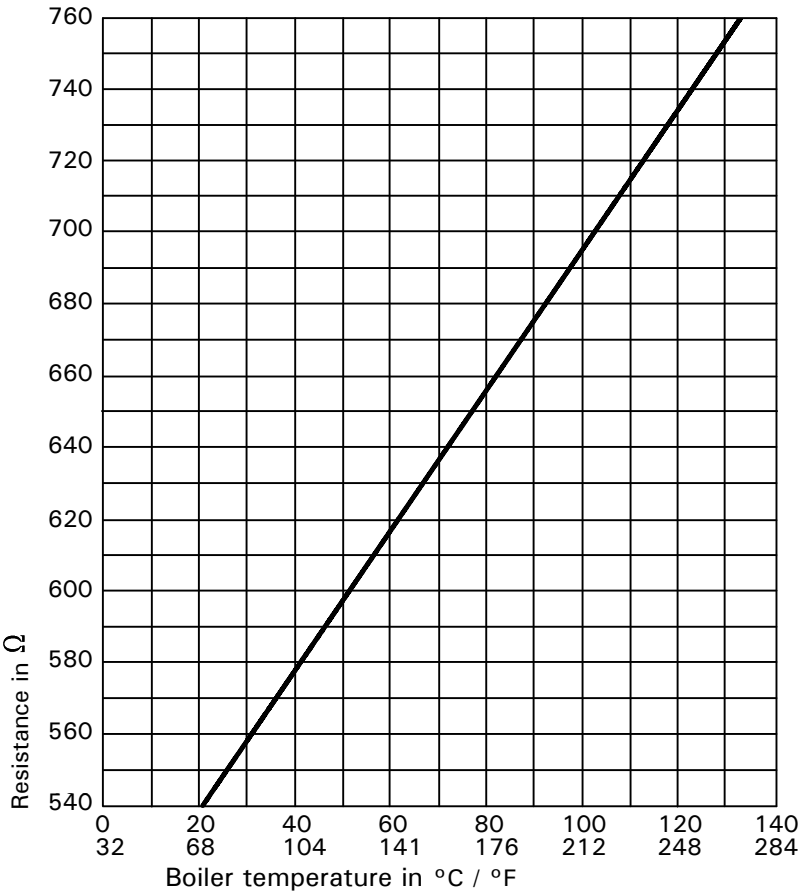
Adjust downwards at least 20 °C / 36 °F higher than the DHW temperature, upwards at least 15 °C/ 27 °F lower than the fixed high limit.

- Electromechanical temperature switch according to the liquid expansion principle
- Regulates the maximum boiler water temperature (e.g. in emission test mode)
- Adjusting shaft 6 mm / 0.2 inches half-round
  Adjustment knob pushed on shaft from front
- Capillary 3600 mm / 142 inches long
  Probe ∅ 3 mm / 0.1 inches, 180 mm/ 7 inches long
- Tests:
  Effectiveness via emissions test mode

Components from the parts list (cont.)

Boiler water temperature sensor





The sensor measures the boiler water temperature of the boiler.

The boiler temperature sensor is installed at the same time as the boiler insulation.

Check the sensor

1. Disconnect plug 3 in the terminal compartment of the boiler control.
2. Measure resistance of sensor at terminals "1" and "2" of the plug.

Boiler water temperature in °C / °F	Resistance in Ω
40 / 104	578
50 / 122	597
60 / 140	616

3. Compare the value measured with the current temperature. If the value differs significantly, check installation and, if necessary, replace sensor.

Technical data

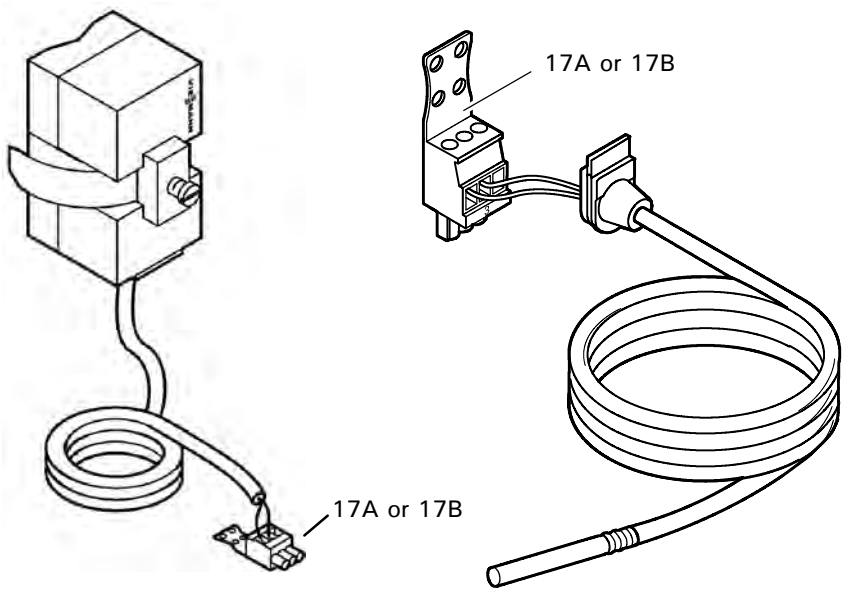
Degree of protection: IP 32
Ambient temperature
- during operation:
  0 to + 130 °C
  32 to + 266 °F
- during storage and transport:
  -20 to + 70 °C
  - 4 to + 158 °F

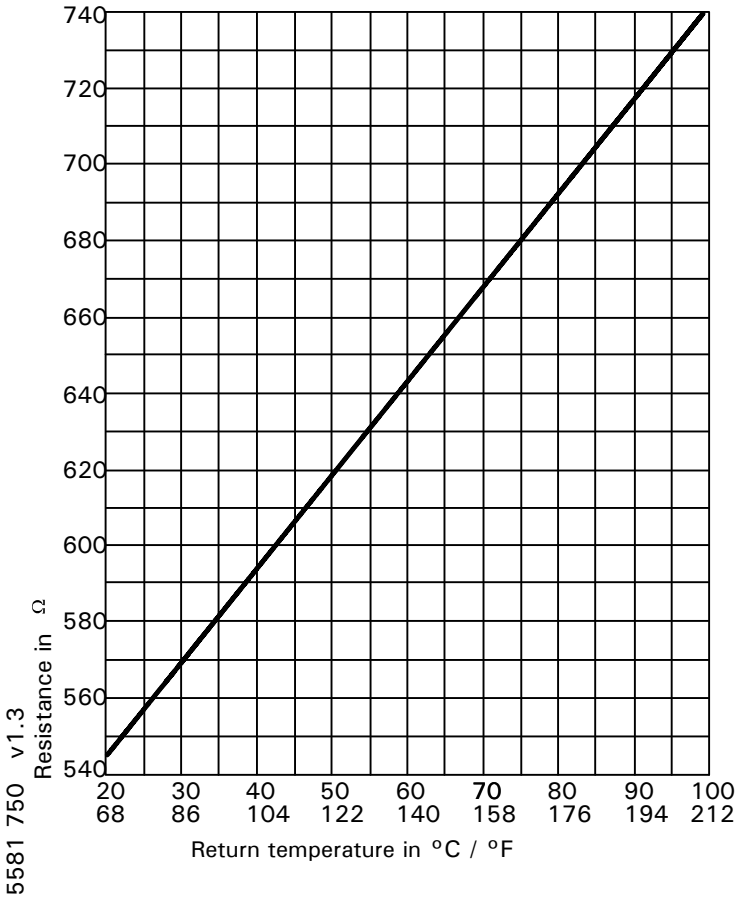
Electrical connection

The sensors are ready to plug in. Insert the boiler temperature sensor in socket "3" of the boiler control.

Components from the parts list (cont.)

Strap-on temperature sensor and immersion temperature sensor





For measuring the boiler return temperature.

Electrical connection
The sensor is inserted in socket "17A" or "17B" on the boiler control.

Check the sensor

1. Disconnect plug 17 A or 17 B in the terminal compartment of the boiler control.

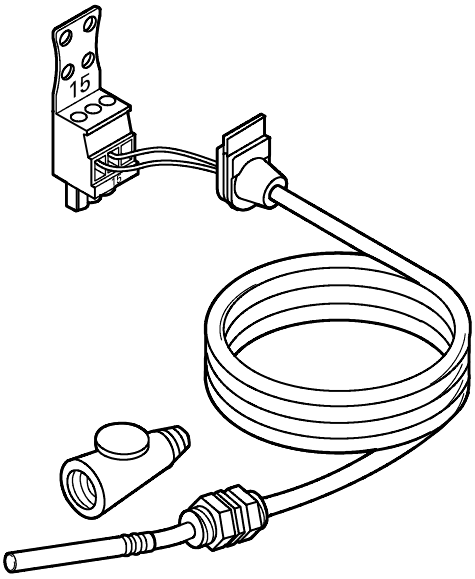
2. Measure resistance of sensor at terminals "1" and "2" of the plug.

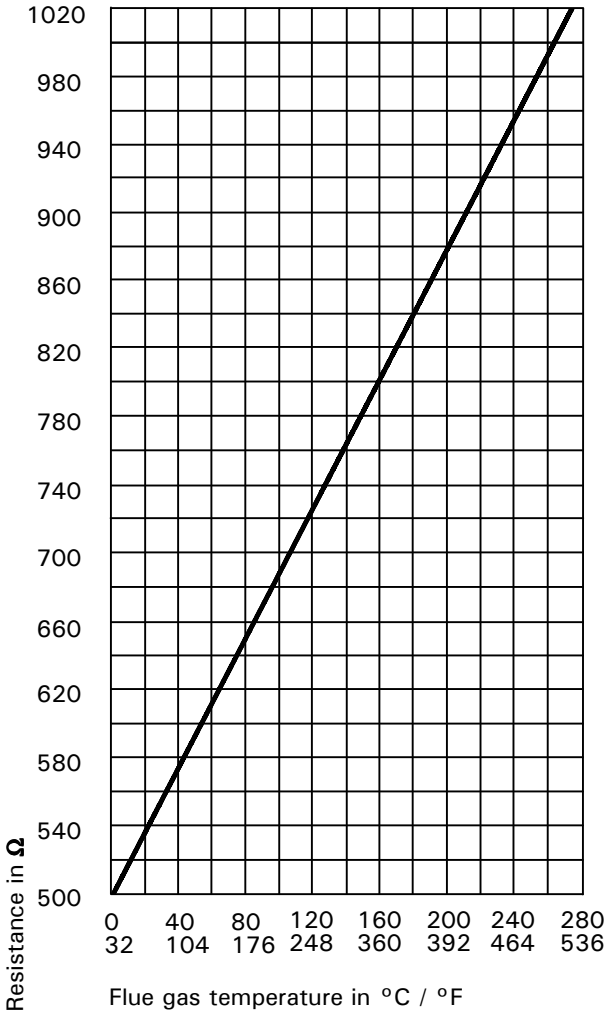
Return temperature in °C / °F	Resistance in Ω
30 / 86	569
40 / 104	592
60 / 140	643

3. Compare the value measured with the current temperature. If the value differs significantly, check installation and, if necessary, replace sensor.

Technical data
Degree of protection: IP 32
Ambient temperature
- during operation: 0 to + 100 °C
  32 to + 212 °F
- during storage and transport: -20 to + 70 °C
  -4 to + 158 °F

Flue gas temperature sensor





The sensor measures the flue gas temperature and monitors the selected limit value.

Electrical connection
The sensor is inserted in socket "15" on the boiler control.

Check flue gas temperature sensor

1. Disconnect plug 15 in the terminal compartment of the boiler control.

2. Measure resistance of sensor at terminals "1" and "2" of the plug.

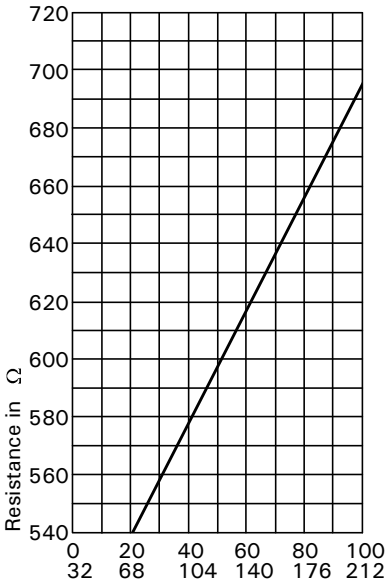
Flue gas temperature in °C / °F	Resistance in Ω
80 / 176	650
160 / 320	800
200 / 392	880

3. Compare the value measured with the actual temperature. If the value differs significantly, check installation and, if necessary, replace sensor.

Technical data
Degree of protection: IP 60
Ambient temperature
- during operation:
  0 to + 600 °C
  32 to + 1112 °F
- during storage and transport:
  –20 to + 70 °C
  –4 to + 158 °F

Components from the parts list (cont.)

DHW tank temperature sensor



Connection
See page 58 and 59.

Check sensor
1. Remove plug [5].

2. Check the sensor resistance of the plug at terminals 1 and 2 or 2 and 3 (if a second DHW tank temperature sensor has been connected).

DHW tank temperature in °C / °F	Resistance in Ω
40 / 104	578
50 / 122	597
60 / 140	616

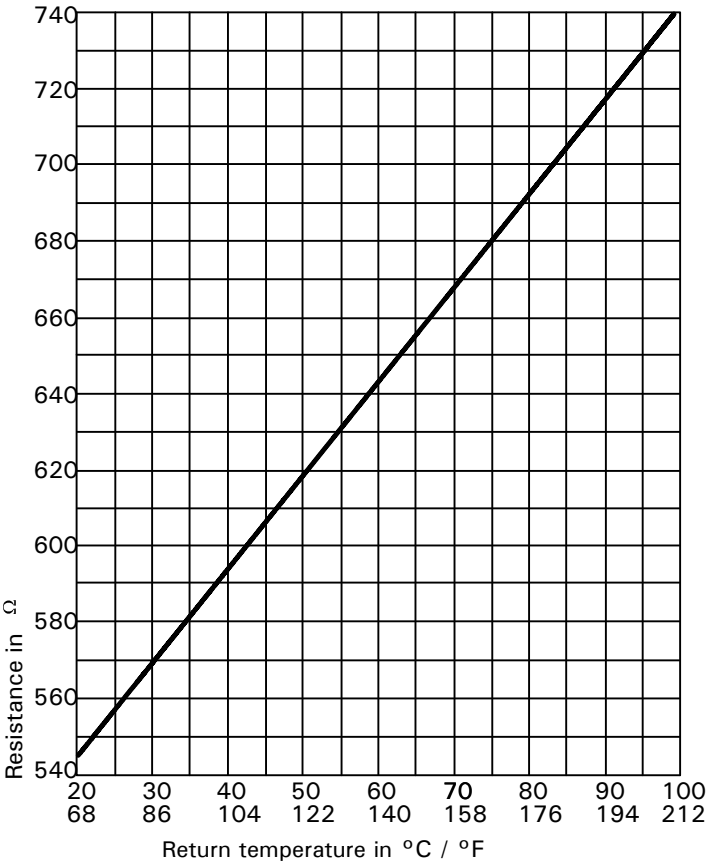
3. Compare measurement with the actual temperature displayed (for scanning, see page 91). Check the installation and replace sensor, if necessary, in case of severe deviation.

Specification
Protection: IP 32
Permiss. ambient temperature
- during operation:
  0 to +90 °C
  32 to 194 °F
- during storage and transport:
  –20 to +70 °C
  –4 to 158 °F

Components from the parts list (cont.)

Strap-on temperature sensor and immersion temperature sensor

To measure the supply or return temperature.



Connection
See page 58 and 59.

Check sensor

1. Remove plug [2], [17][A] or [17][B].

2. Check the sensor resistance at terminals 1 and 2 of the plug.

Supply or return temperature in °C / °F	Resistance in Ω
30 / 86	569
40 / 104	592
60 / 140	643

3. Compare measurement with the actual temperature displayed (for scanning, see page 91). Check the installation and replace sensor, if necessary, in case of severe deviation.

Specification

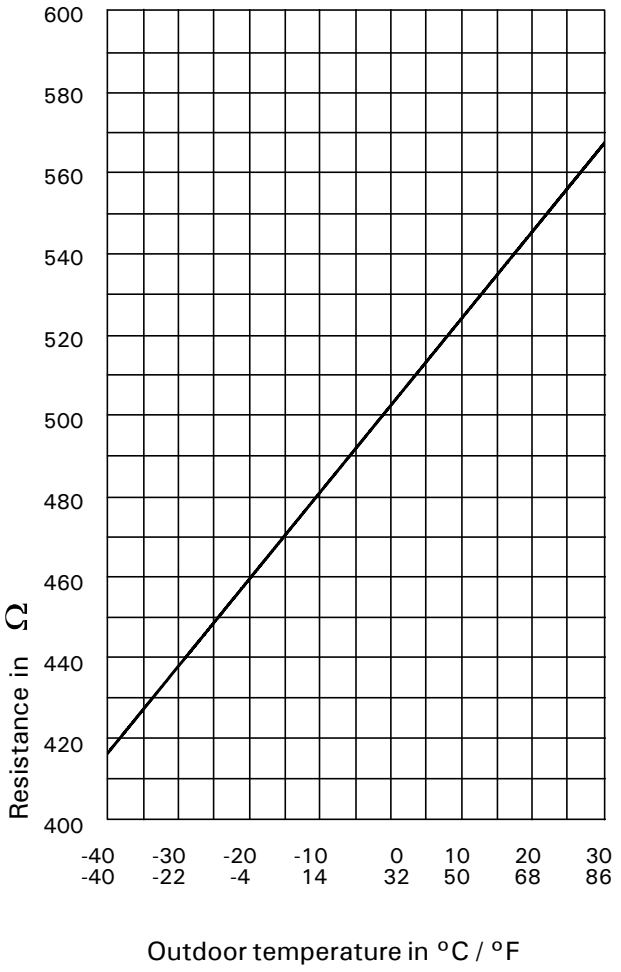
Protection: IP 32

Permiss. ambient temperature

- during operation:
  0 to +100 °C
  32 to + 212 °F
- during storage and transport:
  –20 to + 70 °C
  –4 to + 158 °F

Components from the parts list (cont.)

Outdoor temperature sensor



Connection
See page 58 and 59.

Check sensor

1. Remove plug [1].

2. Check the sensor resistance at terminals 1 and 2 of the plug.

Outdoor temperature in °C / °F	Resistance in Ω
–10 / 14	480
0 / 32	500
20 / 68	546

3. Disconnect cores from the sensor, if actual values deviate severely from the curve, repeat the sensor measurement and compare with the actual temperature (for scanning, see page 91).

4. Depending on the result, replace cable or outdoor temperature sensor.

5. Scan actual temperature (for scanning, see page 91).

Specification

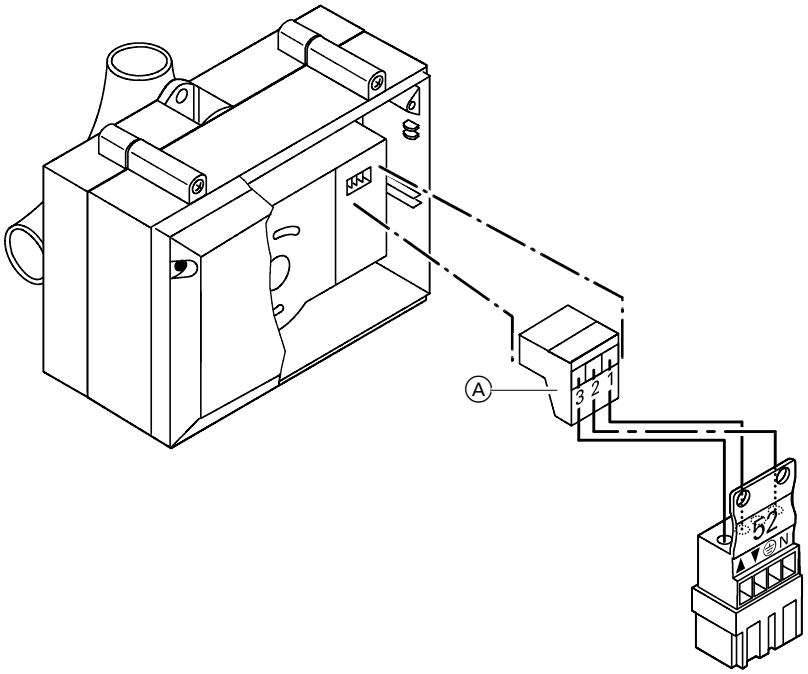
Protection: IP 43

Permissible ambient temperature during operation, storage and transport:

–40 to +70 °C
–40 to 158 °F

Mixing valve circuit extension kit, part no. 7450 650

Mixing valve motor, part no. 7133 390



Ⓐ Plug in the mixing valve motor
▲ Mixing valve motor open
▼ Mixing valve motor close

Changing the rotational direction
Remove the cover and reinsert 3-pole plug Ⓐ turned by 180°.

Test
The relay test of the control unit moves the mixing valve to open and close.

Manual mixing motor adjustment
Lift the motorized lever up, unhook the mixing valve handle and remove plug Ⓐ.

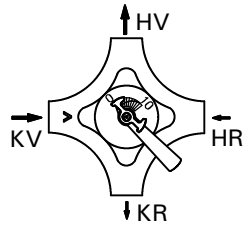
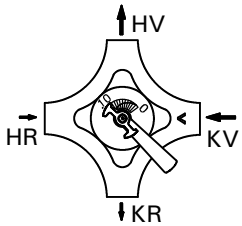
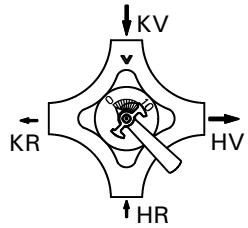
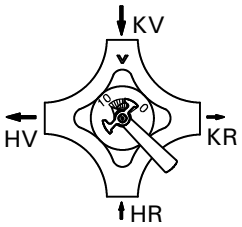
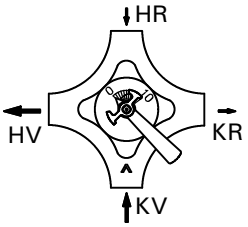
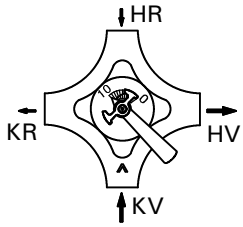
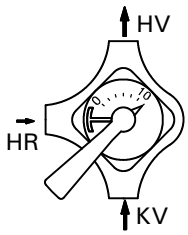
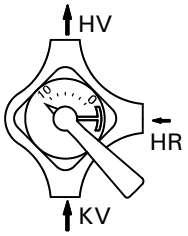
For 24V actuators please refer to instructions supplied with the actuator.

Specification

Rated voltage:	120 VAC ~
Rated frequency:	60 Hz
Power consumption:	4 W
Protection:	IP 42
Torque:	3 Nm
Run time from close to open:	120 s

Installation examples

Mixing valve insert conversion (if required), see mixing valve installation instructions.

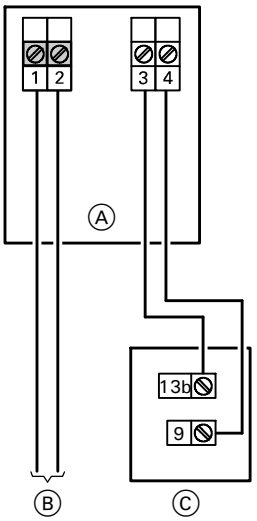
Factory supplied of the mixing valve motor rotational direction	Change the mixing valve motor rotational direction for these installation examples
	
	
	
	

HR Heating return
HV Heating supply
KR Boiler return
KV Boiler supply

Remote control

Vitotrol 200, part no. 7450 017
(with integral room temperature sensor for room temperature feed-back in conjunction with a mixing valve circuit)
Setting of
- Day temperature
- Heating program
- Economy and party mode

Function changes can be made via coding addresses A0, b0 to b9, C0 to C2, E1 and E2 (see coding overview).

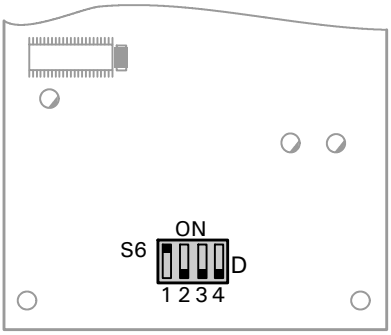


Connection
2-wire cable 164 ft / 50m

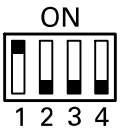
Room temperature sensor connection
Two-core cable, max. 35 m / 115 ft.
length with a cross-section of 1.5 mm^2
(AWG 16) copper

Ⓐ Wall mounting base for Vitotrol 200
Ⓑ To control unit
Ⓒ Separate room temperature sensor

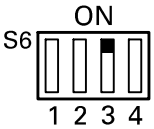
Remote control (cont.)



Ⓓ Printed Circuit Board DIP switches (rear of the top casing)

Remote control affects	DIP switch setting
System circuit A1 (Heating circuit selection button [1])	Factory setting 
Mixing valve circuit M2 (Heating circuit selection button [2])	
Mixing valve circuit M3 (Heating circuit selection button [3])	

When connecting a separate room temperature sensor, set DIP switch S6.3 to ON.



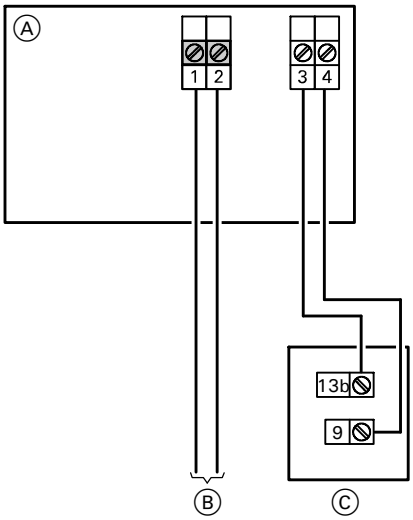
Specification
Power supply via KM BUS.
Safety class: III
Protection: IP 30
Permiss. ambient temperature
- during operation:
  0 to +40 °C
  32 to 104 °F
- in storage and transport:
  –20 to +65 °C
  –4 to +149 °F

Set room temperature setting range:
10 to 30 °C
50 to 96 °F
adjustable between
3 to 23 °C
37 to 73 °F
or
17 to 37 °C
63 to 99 °F
via coding address E1
Setting of the reduced set room temperature at the control unit.

Remote control (cont.)

Vitotrol 300, part no. 7450 790 or 7179 060
(with integral room temperature sensor for room temperature feed-back in conjunction with a mixing valve circuit)
Setting of
- Normal and reduced temperature
- Domestic hot water temperature
- Heating program
- Holiday program
- Switching times
- Economy and party mode

Function changes can be made via coding addresses A0, b0 to b9, C0 to C2, E1 and E2 (see coding overview).

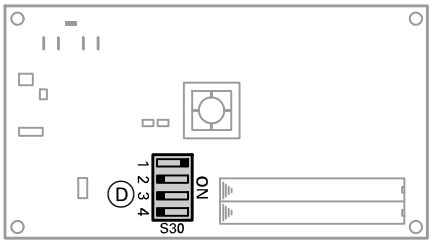


Connection
2-wire cable 164 ft / 50 m.

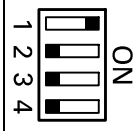
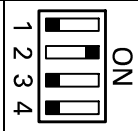
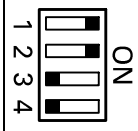
Room temperature sensor connection
Two-core cable, max. 35 m / 115 ft. length with a cross-section of 1.5 mm^2 (AWG 16) copper.

Ⓐ Wall mounting base for Vitotrol 300
Ⓑ To the control unit
Ⓒ Separate room temperature sensor

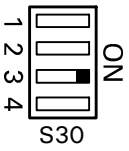
Remote control (cont.)



Ⓓ Printed Circuit Board DIP switches (rear of the top casing)

Remote control affects	DIP switch setting
System circuit A1 (Heating circuit selection button [1])	Factory setting 
Mixing valve circuit M2 (Heating circuit selection button [2])	
Mixing valve circuit M3 (Heating circuit selection button [3])	

When connecting a separate room temperature sensor, set DIP switch S30.3 to ON.



Specification

Power supply via KM BUS.
Safety class: III
Protection: IP 30
Permiss. ambient temperature
- in use:
  0 to +40 °C
  32 to 104 °F
- in storage and transport:
  –20 to +65 °C
  –4 to +149 °F

Setting range for
- normal set room temp:
  10 to 30 °C
  50 to +86 °F

adjustable between
  3 to 23 °C
  37 to 73 °F
  or
  17 to 37 °C
  63 to 97 °F

via coding address E1
- reduced set room temp:
  3 to 37 °C
  37 to 97 °F

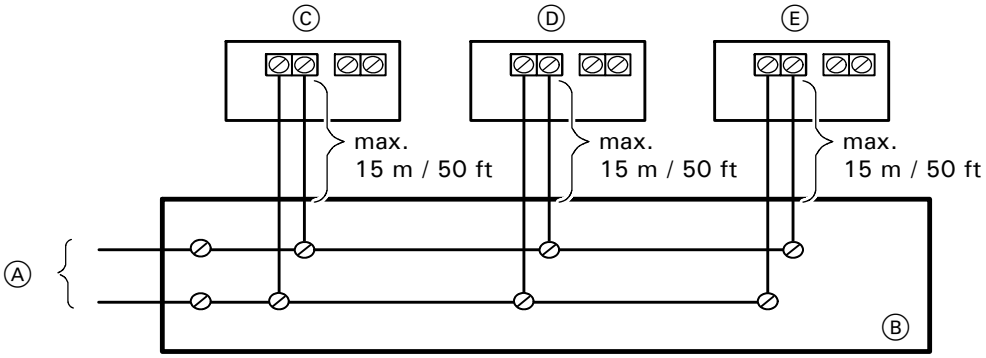
Battery type: Use alkaline manganese batteries type MICRO-LR03 (AAA) which do not contain pollutants

Remote control (cont.)

Connecting several remote control units

When connecting several remote controls to the control unit, install a terminal box on site.

Version 1

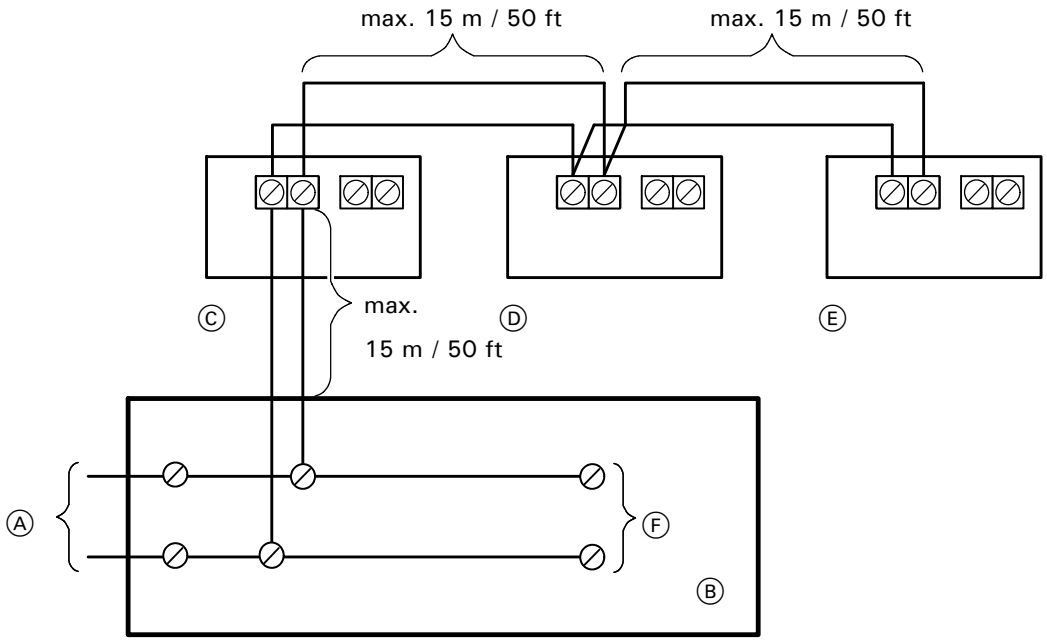


Ⓐ To control unit
Ⓑ Terminal box (on site)
Ⓒ Vitotrol 1
Ⓓ Vitotrol 2
Ⓔ Vitotrol 3

- On-site connection via terminal box: Connect in accordance with the diagram
- The total length of all KM BUS cables should be limited to 50 m / 164 ft

Remote control (cont.)

Version 2

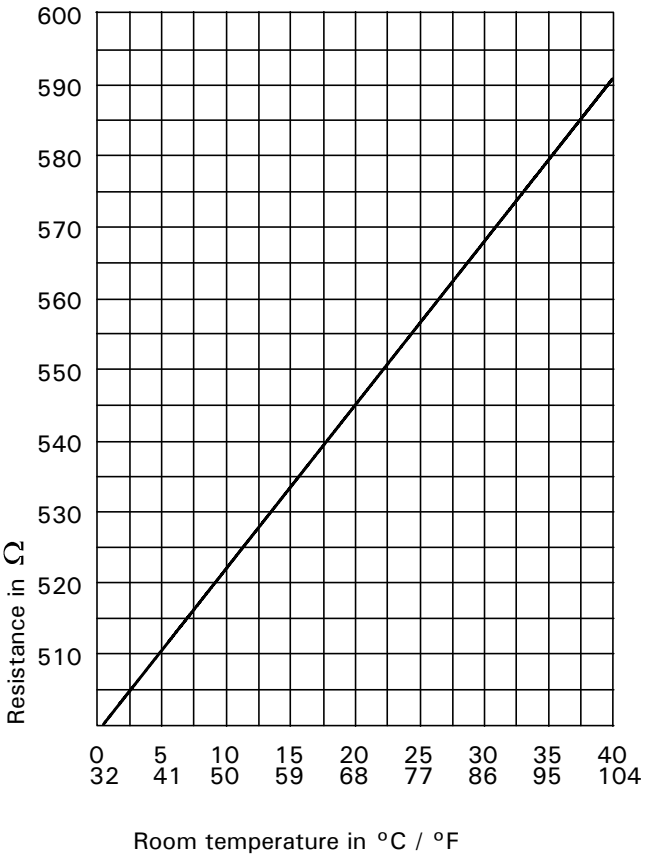


Ⓐ To control unit
Ⓑ Terminal box (on site)
Ⓒ Vitotrol 1
Ⓓ Vitotrol 2
Ⓔ Vitotrol 3
Ⓕ Further BUS participants

- If several remote control units and additional KM BUS participants are connected, make the connections via a terminal box (on-site) as shown in the diagram
- The total length of all KM BUS cables should be limited to 50 m / 164 ft

Room temperature sensor, part no. 7408 012

The room temperature sensor measures the actual room temperature, if the remote Vitotrol unit cannot be installed in a suitable location.



Connection
See page 58 and 59.

Check sensor

1. Disconnect the wires from the sensor.

2. Check the sensor resistance at terminals 9 and 13b.

Room temperature in ˚C / ˚F	**Resistance in Ω**
10 / 50	522
15 / 59	534
25 / 77	557

3. Compare measurement with the actual temperature displayed (for scanning, see page 91). Check the installation and replace sensor, if necessary, in case of severe deviation.

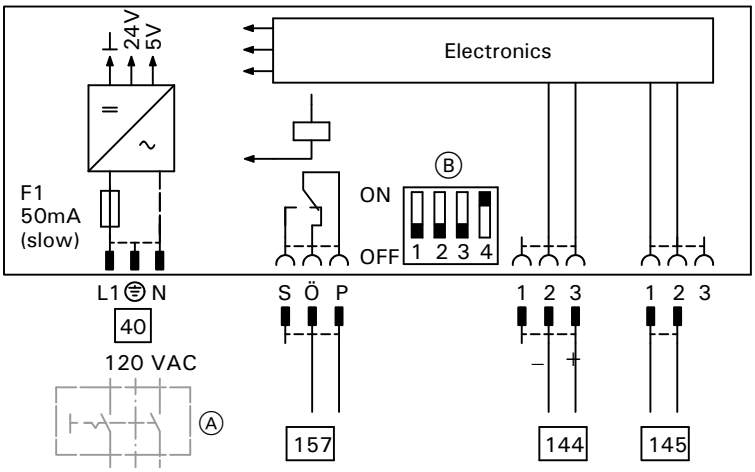
Specification

Protection: IP 30
Permiss. ambient temperature
- during operation:
  0 to +40 ˚C
  32 to 104 ˚F
- in storage and transport:
  –20 to +65 ˚C
  –4 to +149 ˚F

Input Module 0 to 10 V, part no. 7134 561

From software version 7 of Vitotronic 300-K, MW1S, the Input Module can be connected (software version via scan 2: 1st digit, display ≥7).

For external control of the boiler/supply temperature via a 0 to 10VDC signal
10 to 100 °C or 30 to 120 °C
(50 to 212 °F or 86 to 248 °F)
or
to signal reduced mode and regulate a heating circuit pump to a lower speed.

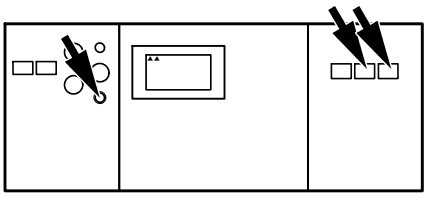


40 Power connection
144 0 to 10VDC input
145 KM BUS to control unit
157 Potential free output contact
Ⓐ Power supply (provide disconnect if required by code)
Ⓑ DIP switch (see table)

DIP switch		Function
1 to 3:	OFF	Switch for pre-set value
1:	ON	Reduced mode – system circuit A1
2:	ON	Reduced mode – mixing valve circuit M2
3:	ON	Reduced mode – mixing valve circuit M3
4:	ON	Pre-set value default 10 to 100 °C / 50 to 212 °F
4:	OFF	Pre-set value default 30 to 120 °C / 86 to 248 °F

Please note:
*Amongst switches 1 to 3, only **one** switch may be set to ON.*

Resetting codings to the factory setting

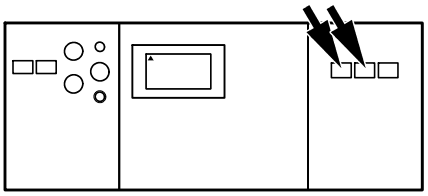


1. Press and simultaneously for approx. two seconds, until the first two arrows appear in the display.

2. Press .

Coding 1

Calling up coding 1



1. Press ⏻ and 🚿 simultaneously for approx. two seconds, until the first arrow appears in the display.
2. Select the required coding address with ⊕ or ⊖; the address flashes; confirm with OK, the value flashes.
3. Change the value with ⊕ or ⊖; confirm with OK. The value is transferred and does not flash for approx. 2 seconds. Then the display flashes again. Call up further addresses with ⊕ or ⊖.
4. Press ⏻ and 🚿 simultaneously for approx. 1 second.

Summary

Coding in the factory setting		Possible change	
System design			
00: 1	No function	00: 0	Boiler control connected to the cascade; this automatically occurs if 01 : 2 has been programmed
System type			
01: 1	Single boiler system	01: 2	Multi-boiler system with cascade control via LON BUS (e.g. Vitotronic 333, MW1S)
		01: 3	Do not adjust
Boiler/burner			
02: 1	Two-stage burner	02: 0	Single stage burner
		02: 2	Modulating burner
03: 0	Gas fired operation	03: 1	Oil fired operation (non-reversible)
		03: 2	This occurs automatically, if an incorrect or no boiler coding card at all is inserted
Burner (mod.) (see page 79)			
05: 70	Burner curve	05: 0	Linear burner curve
		05: 1 to 05: 99	Non-linear burner curve (see page 79): $\frac{P_T \text{ in kW}}{P_{max} \text{ in kW}} \times 100\ \%$ $= P_T$ in % P_T Partial output at 1/3 of the burner actuator operating time P_{max} Maximum output

Coding 1 (cont.)

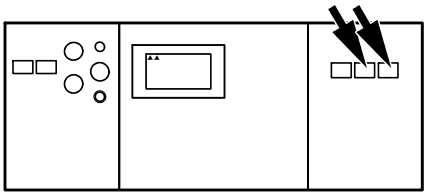
Coding in the factory setting		Possible change	
Boiler/burner			
06: 87	Maximum boiler water temperature limit 87 °C / 189 °F	06: 20 to 06:127	Maximum boiler water temperature limit adjustable from 20 to 127 °C / 68 to 261 °F
Boiler			
07: 1	Consecutive boiler number in multi-boiler systems (in conjunction with coding address 01)	07: 2 to 07: 4	Consecutive boiler number in multi-boiler systems (in conjunction with coding address 01)
Burner (two stage/mod.) (see page 78)			
08:*1	Maximum burner output in kW	08: 0 to 08:199	Maximum output adjustable from 0 to 199 kW; 1 setting step = 1 kW
09:*1	Maximum burner output in kW	09: 0 to 09:199	Maximum output adjustable from 0 to 19900 kW; 1 setting step = 100 kW
0A:*1	Burner base output in percent	0A: 0 to 0A:100	$\frac{P_G \text{ in kW}}{P_{max} \text{ in kW}} \times 100$ % $= P_G$ in % P_G Base output P_{max} Maximum output
Burner (mod.) (see page 79)			
15: 10	Burner actuator run time 10 seconds	15: 5 to 15:199	Operating time adjustable from 5 to 199 seconds for Vitocrossal 300 with MatriX burner Set ■ Type CM3 and CU3: 15 : 64 ■ Type CV3: 15 : 19
General			
40:125	Actuator operating time for isolation valve, three-way mixing valve or mixing valve motor in conjunction with return temperature control 125 seconds	40: 5 to 40:199	Operating time adjustable from 5 to 199 seconds
77: 1	LON participant number	77: 2 to 77: 99	LON participant number, adjustable from 1 to 99 ***Please note:*** *Allocate each number* ***only once****.*

*1

The factory setting is defaulted by the boiler coding card.

Coding 2

Calling up coding 2



1. Press ⬑ and ▥⬑ simultaneously for approx. 2 seconds, until the first two arrows appear in the display; confirm with OK
2. Select the required coding address with ⊕ or ⊖; the address flashes; confirm with OK, the value flashes.
3. Change the value with ⊕ or ⊖; confirm with OK. The value is saved and does not flash for approx. 2 seconds. Then the display flashes again. Call up further addresses with ⊕ or ⊖.
4. Press ⬑ and ▥⬑ simultaneously for approx. 1 second.

Overall summary

Coding in the factory setting		Possible change	
System design			
00: 1	No function	00: 0	Boiler control connected to the cascade; this automatically occurs if 01 : 2 has been programmed
System type			
01: 1	Single boiler system	01: 2	Multi-boiler system with cascade control via LON BUS (e.g. Vitotronic 300-K, MW1S, type MW1)
		01: 3	Do not adjust
Boiler/burner			
02: 1	Two-stage burner	02: 0	Single stage burner
		02: 2	Modulating burner
03: 0	Gas fired operation	03: 1	Oil fired operation (non-reversible)
		03: 2	This occurs automatically, if an incorrect or no boiler coding card is inserted
04:*1	Switching differential (Please note: see page 147)	04: 0	Switching differential 4 °C / 7.2 °F
		04: 1	Heat demand-dependent switching differential: ERB50 function (values from 6 to 12 °C / 10.8 to 21.6 °F)
		04: 2	ERB80 function (values from 6 to 20 °C / 10.8 to 36 °F)

*1

The factory setting is defaulted by the boiler coding card.

Coding 2 (cont.)

Coding in the factory setting		Possible change	
Burner (mod.) (see page 79)			
05: 70	Burner curve	05: 0	Linear burner curve
		05: 1 to 05: 99	Non-linear burner curve (see page 79): $\frac{P_T \text{ in kW}}{P_{max} \text{ in kW}} \times 100\ \%$ $= P_T$ in % P_T Partial load at 1/3 of the burner actuator operating time P_{max} Maximum output
Boiler/burner			
06: 87	Maximum boiler water temperature limit 87 °C / 186 °F	06: 20 to 06:127	Maximum boiler water temperature limit adjustable from 20 to 127 °C / 68 to 127 °F
Boiler			
07: 1	Consecutive boiler number in multi-boiler systems (in conjunction with coding address 01)	07: 2 to 07: 4	Consecutive boiler number in multi-boiler systems (in conjunction with coding address 01)
Burner (two stage/mod.) (see page 78)			
08:*1	Maximum burner output in kW	08: 0 to 08:199	Maximum output adjustable from 0 to 199 kW; 1 setting step = 1 kW
09:*1	Maximum burner output in kW	09: 0 to 09:199	Maximum output adjustable from 0 to 19900 kW; 1 setting step = 100 kW
0A:*1	Burner base output in percent	0A: 0 to 0A:100	$\frac{P_G \text{ in kW}}{P_{max} \text{ in kW}} \times 100\ \%$ $= P_G$ in % P_G Base output P_{max} Maximum output

*1

The factory setting is defaulted by the boiler coding card.

Coding 2 (cont.)

Coding in the factory setting		Possible change	
Boiler			
0C: 5	Isolation valve modulating independently of set boiler water temperature	0C: 0	No function
		0C: 1	Constant control of return temperature
		0C: 2	Controlled with time-delay isolation valve
		0C: 3	Isolation valve controlled via boiler water temperature
		0C: 4	Isolation valve modulating subject to set boiler water temperature
0d: 2	With Therm-Control, affects isolation valve (function inactive, if 0C : 1 is programmed)	0d: 0	Without Therm-Control
		0d: 1	With Therm-Control, affects mixing valves of downstream heating circuits
Boiler/burner			
13:*1	Shutdown differential in °C / °F Burner is switched OFF when the set boiler water temperature is exceeded	13: 0	Without shutdown differential
		13: 2 to 13: 20	Shutdown differential adjustable from 2 to 20 °C / 3.6 to 36 °F
Burner			
14:*1	Minimum operating time in minutes	14: 0 to 14: 15	Minimum operating time adjustable from 0 to 15 minutes
Burner (mod.) (see page 79)			
15: 10	Burner actuator run time 10 seconds	15: 5 to 15:199	Operating time adjustable from 5 to 199 seconds for Vitocrossal 300 with MatriX burner Set ■ Type CM3 and CU3: 15 : 64 ■ Type CV3: 15 : 19

*1

The factory setting is defaulted by the boiler coding card.

Coding 2 (cont.)

Coding in the factory setting		Possible change	
Burner (two stage/mod.)			
16:*1	Burner offset in °C / °F temporary reduction of set boiler water temperature after burner start	16: 0 to 16: 15	Offset during start-up optimization adjustable from 0 to 15 °C / 0 to 27 °F
1A:*1	Start-up optimization in minutes	1A: 0 to 1A: 60	Duration of start-up optimisation adjustable from 0 to 60 minutes
Burner			
1b: 60	Time from burner ignition to control unit start 60 seconds	1b: 0 to 1b:199	Control delay adjustable from 0 to 199 seconds
1C:120	Start-up delay 120 seconds (only adjustable if no operating signal B4 is available at burner plug 41)	1C: 1 to 1C:199	Start-up delay adjustable from 1 to199 seconds
Boiler			
1F: 0	Flue gas temperature is not monitored for burner maintenance indication	1F: 1 to 1F: 50	With flue gas temperature sensor: Maintenance indication will be issued if flue gas temperature exceeded; adjustable from 10 to 500 °C / 50 932 °F 1 setting step = 10 °C / 18 °F
Boiler/burner			
21: 0	No run hours interval for burner maintenance	21: 1 to 21:100	Number of run hours by burner before maintenance is adjustable from 100 to 10000 hours; 1 setting step = 100 hours
23: 0	No time interval for burner maintenance	23: 1 to 23: 24	Time interval adjustable from 1 to 24 months

*1

The factory setting is defaulted by the boiler coding card.

Coding 2 (cont.)

Coding in the factory setting		Possible change	
Boiler/burner			
24: 0	No maintenance indication	24: 1	Maintenance indication in display (address is automatically set and must be manually reset after maintenance has been carried out)
Boiler/burner (two-stage)			
26: 0	Burner fuel consumption (stage 1); no count, if 26 : 0 **and** 27 : 0 have been programmed	26: 1 to 26: 99	Input of 0.1 to 9.9; 1 setting step = 0.1 litre or gallons/hour*1
27: 0		27: 1 to 27:199	Input of 10 to 1990; 1 setting step = 10 litres or gallons/hour*1
Boiler/burner			
28: 0	No burner interval ignition	28: 1	The burner will be force-started for 30 seconds after 5 hours
Boiler/burner (two-stage)			
29: 0	Burner fuel consumption (stage 2); no count, if 29 : 0 **and** 2A : 0 have been programmed	29: 1 to 29: 99	Input of 0.1 to 9.9; 1 setting step = 0.1 litre or gallons/hour*1
2A: 0		2A: 1 to 2A:199	Input of 10 to 1990; 1 setting step = 10 litres or gallons/hour*1
General			
2b: 5	Maximum pre-heating time of isolation valve 5 minutes	2b: 0	No pre-heating time
		2b: 1 to 2b: 60	Pre-heating time adjustable from 1 to 60 minutes

*1

The fuel consumption can only be scanned in conjunction with Vitosoft or Vitocom.

Coding 2 (cont.)

Coding in the factory setting		Possible change	
General (cont.)			
2C: 5	Maximum time delay of isolation valve 5 minutes	2C: 0	No time delay
		2C: 1 to 2C: 60	Time delay adjustable from 1 to 60 minutes
Boiler			
2d: 0	Shunt pump control function only ON if boiler is enabled	2d: 1	Shunt pump control function ON, independent of whether boiler is enabled or not
General			
40:125	Actuator operating time for isolation valve, three-way mixing valve or mixing valve motor in conjunction with return temperature control 125 seconds	40: 5 to 40:199	Operating time adjustable from 5 to 199 seconds
4A: 0	Sensor 17 A not installed	4A: 1	Sensor 17 A installed (e.g. Therm-Control temperature sensor); will be recognised automatically
4b: 0	Sensor 17 B not installed	4b: 1	Sensor 17 B installed (e.g. temperature sensor T2); will be recognised automatically
4C: 2	Connection on plug 20 A1: Therm-Control switching contact	4C: 1	Do not adjust
		4C: 3	DHW recirculation pump
4d: 1	Connection on plug 29: Shunt pump	4d: 2	Boiler circuit pump
		4d: 3	Boiler circuit pump with isolation valve function

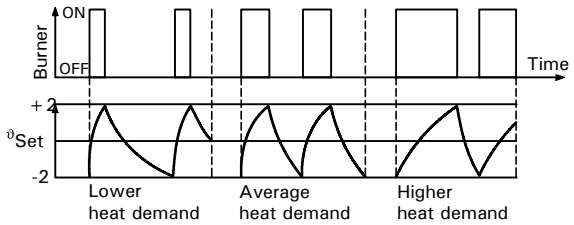
Coding 2 (cont.)

Coding in the factory setting		Possible change	
General			
4E: 0	Connection on plug [52]: Isolation valve or three-way mixing valve for return temperature control	4E: 1	Do not adjust
4F: 5	Time delay shunt or boiler circuit pump 5 minutes	4F: 0	No pump time delay
		4F: 1 to 4F: 60	Time delay adjustable from 1 to 60 minutes
General			
76: 0	Without communication module	76: 1	With LON communication module; will be recognized automatically
		76: 2	Do not adjust
77: 1	LON participant number	77: 2 to 77: 99	LON participant number, adjustable from 1 to 99 ***Please note:*** *Allocate each number **only once**.*
78: 1	Enable LON communication	78: 0	Disable LON communication
79: 0	Control unit is not fault manager	79: 1	Control unit is fault manager
80: 1	A fault message is issued if a fault is active for at least 5 seconds	80: 0	Immediate fault message
		80: 2 to 80:199	Minimum fault duration before displaying a fault message is adjustable from 10 to 995 seconds; 1 setting step = 5 seconds
88: 0	Temperature display in Celsius	88: 1	Temperature display in Fahrenheit
8A:175	Display of codings which can be adjusted with system layout	8A:176	Display of all codings, irrespective of system layout or connected accessories
92:160	Do not adjust Address will only be displayed if 8A : 176 has been programmed.		
93: 0	Central fault message during economy mode/service indication does not affect central fault messages	93: 1	Central fault message during economy mode/service indication does affect central fault messages
94: 0	Without plug-in adaptor for external safety equipment	94: 1	With plug-in adaptor for external safety equipment; will be recognized automatically
98: 1	Viessmann system number (in conjunction with monitoring several systems within one LON system via Vitocom 300)	98: 1 to 98: 5	System number adjustable from 1 to 5
9b: 0	No function	9b: 1 to 9b:127	Do not adjust
9C: 20	Monitoring LON participants When there is no response from a participant, values defaulted inside the control unit continue to be used for a further 20 minutes. Only then will a fault message be triggered.	9C: 0	No monitoring
		9C: 5 to 9C: 60	Time adjustable from 5 to 60 minutes
9d: 0	No function	9d: 1	Do not adjust

Burner switching differential

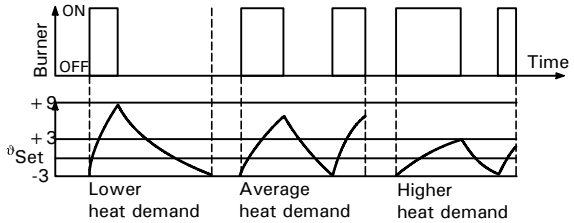
For adjustment, see coding 04 on page 140.

Switching differential 4 °C / 7 °F **(coding 04 : 0)**

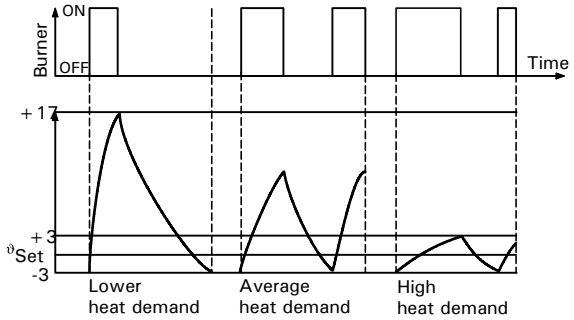


Heat demand-dependent switching differential

ERB50 function (coding 04 : 1)
Subject to heat demand, values between 6 and 12 °C / 11 and 22 °F result.

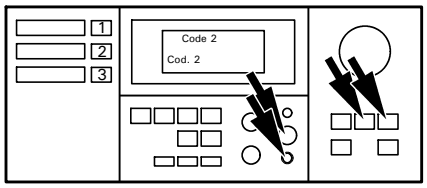


ERB80 function (coding 04 : 2)
Subject to heat demand, values between 6 and 20 °C / 11 to 36 °F result.



The heat demand-dependent switching differential takes the boiler load into account.
The switching differential, i.e. the burner operating time, changes based on current heat demand.

Resetting codings to the factory setting

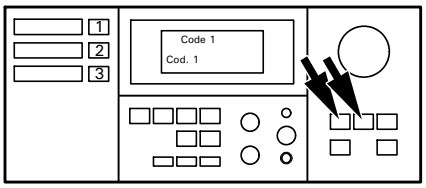


1. Press and simultaneously for approx. two seconds.

2. Press .
   Confirm Base setting? "Yes" with (OK).
   Select Base setting "Yes" or Base setting "No" with ⊕ or ⊖.

Coding 1

Calling up coding 1



1. Press ⏻ and 🛁 simultaneously for approx. 2 seconds.
2. Select the required coding address with ⊕ or ⊖; the address flashes; confirm with OK, the value flashes.
3. Change the value with ⊕ or ⊖; confirm with OK. The display briefly shows Adopted, then the address flashes again. Call up further addresses with ⊕ or ⊖.
4. Press ⏻ and 🛁 simultaneously for approx. 1 second.

Summary

Coding in the factory setting		Possible change	
System design			
00: 1	System circuit A1, without DHW heating	00: 2	System circuit A1, with DHW heating
		00: 3	Mixing valve circuit M2, without DHW heating
		00: 4	Mixing valve circuit M2, with DHW heating
		00: 5	Boiler circuit A1 and Mixing valve circuit M2, without DHW heating
		00: 6	Boiler circuit A1 and Mixing valve circuit M2, with DHW heating
		00: 7	Mixing valve circuit M2 and M3, without DHW heating
		00: 8	Mixing valve circuit M2 and M3, with DHW heating
		00: 9	Boiler circuit A1 and Mixing valve circuits M2 and M3, without DHW heating
		00: 10	Boiler circuit A1 and Mixing valve circuits M2 and M3, with DHW heating
Number of boilers			
35: 4	4 boilers connected to Vitotronic 300-K, MW1S	35: 1 to 35: 3	1 to 3 boilers connected to Vitotronic 300-K, MW1S

Coding 1 (cont.)

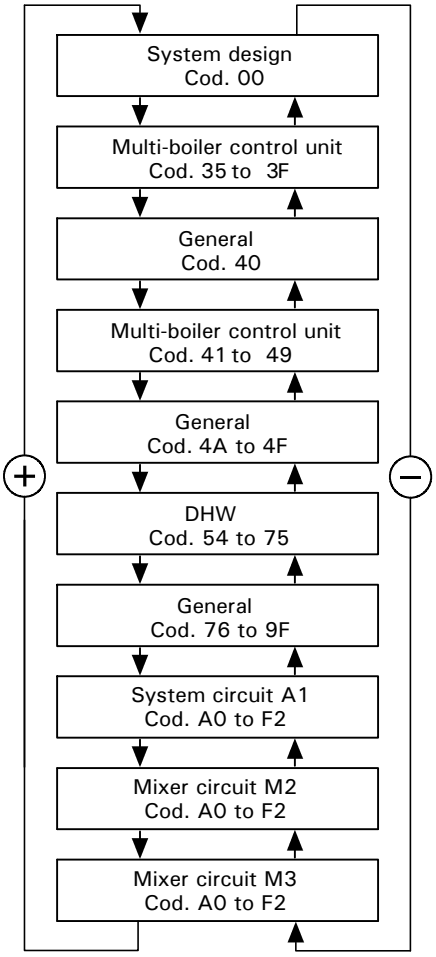
Coding in the factory setting		Possible change	
Multi-boiler control unit			
36: 0	Electronic minimum system supply temperature limit set to 0 °C / 32 °F	36: 1 to 36:127	Electronic minimum system supply temperature limit adjustable from 0 to 127 °C / 32 to 261 °F
37: 80	Electronic maximum system supply temperature limit set to 80 °C / 176 °F	37: 20 to 37:127	Electronic maximum system supply temperature limit adjustable from 20 to 127 °C / 68 to 261 °F
Control type			
3b: 1	Autonomous boiler parallel connection with supply temperature sensor	3b: 0	Autonomous boiler parallel connection without supply temperature sensor
		3b: 2	Autonomous boiler series connection without supply temperature sensor
		3b: 3	Autonomous boiler series connection with supply temperature sensor
		3b: 4	Sequential type of control with supply temperature sensor
Control strategy			
3C: 2	Net calorific strategy 2 (see page 110)	3C: 0	Gross calorific strategy (see page 109)
		3C: 1	Net calorific strategy 1 (see page 110)
General			
40:125	Actuator operating time for isolation valve, three-way mixing valve or mixing valve motor in conjunction with permanent return temperature control 125 seconds	40: 5 to 40:199	Operating time adjustable from 5 to 199 seconds

Coding 1 (cont.)

Coding in factory setting		Possible change	
General (cont.)			
77: 5	LON participant number	77: 1 to 77: 99	LON participant number, adjustable from 1 to 99 ***Please note*** *Allocate each number **only once**.*
DHW priority A1			
A2: 2	DHW tank priority applicable to heating circuit pump	A2: 0	Without DHW tank priority applicable to heating circuit pump
		A2: 1 A2: 3 to A2: 15	No function
Summer econ. A1			
A5: 5	With heating circuit pump logic function	A5: 0	Without heating circuit pump logic function
Supply min. temp. A1			
C5: 20	Electronic minimum supply temperature limit 20 °C / 68 °F	C5: 1 to C5:127	Min. limit adjustable from 1 to 127 °C / 24 to 261 °F; only effective with room heating with normal temp.
Supply max. temp. A1			
C6: 75	Maximum supply temperature limit 75 °C / 176 °F	C6: 10 to C6:127	Maximum limit adjustable from 10 to 127 °C / 50 to 261 °F
DHW priority M2/M3			
A2: 2	DHW tank priority applicable to heating circuit pump and mixing valve	A2: 0	Without DHW tank priority applicable to heating circuit pump and mixing valve
		A2: 1	DHW tank priority only applicable to mixing valve
		A2: 3 to A2: 15	Do not adjust
Coding in the factory setting		**Possible change**	
Summer econ. M2/M3			
A5: 5	With heating circuit pump logic function	A5: 0	Without heating circuit pump logic function
Supply min. temp. M2/M3			
C5: 20	Electronic minimum supply temperature limit 20 °C / 68 °F	C5: 1 to C5:127	Minimum limit adjustable from 1 to 127 °C / 34 to 261 °F; only effective with room heating with normal temperature
Supply max. temp. M2/M3			
C6: 75	Maximum supply temperature limit 75 °C / 167 °F	C6: 10 to C6:127	Maximum limit adjustable from 10 to 127 °C / 50 to 261 °F

Coding 2

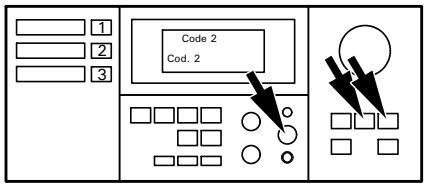
The summary from page 152 lists all possible coding addresses.



The coding addresses are grouped in accordance with the adjacent sequence.

Initially the possible coding addresses A0 to F2 for the system circuit A1 are scrolled, then those for mixing valve circuits M2 and M3, again starting with coding address A0.

Calling up coding 2



1. Press and simultaneously for approx. 2 seconds; confirm with OK.
2. Select the required coding address with + or −; the address flashes; confirm with OK, the value flashes.
3. Change the value with + or −; confirm with OK. The display briefly shows adopted, then the address flashes again. Call up further addresses with + or −.
4. Press and simultaneously for approx. one second.

Coding 2 (cont.)

Overall summary

Coding in the factory setting		Possible change	
System design			
00: 1	See page 148		
Multi-boiler control unit			
35: 4	4 boilers connected to Vitotronic 300-K, MW1S	35: 1 to 35: 3	1 to 3 boilers connected to Vitotronic 333, MW1S
36: 0	Electronic minimum system supply temperature limit set to 0 °C / 32 °F	36: 1 to 36:127	Electronic minimum system supply temperature limit adjustable from 0 to 127 °C / 32 to 261 °F
37: 80	Electronic maximum system supply temperature limit set to 80 °C / 176 °F	37: 20 to 37:127	Electronic maximum system supply temperature limit adjustable from 20 to 127 °C / 68 to 261 °F
38: 0	No changing of lead boiler and the boiler sequence ***Please note:*** *In multi-boiler systems, where one boiler is permamently provided as standby boiler, change that boiler over to become the active boiler only in longer intervals, e.g. as part of the annually required system inspection.*	38: 1	Changing the lead boiler: Every 1st day of the month, the boiler with the burner which has operated for the shortest number of hours, becomes lead boiler
		38: 2 to 38:200	Changing the lead boiler: After 200 to 20000 run hours, the boiler with the next higher number (coding address 07 of Vitotronic 100) becomes lead boiler; 1 setting step = 100 run hours
39: 0	No permanent lead boiler	39: 1 to 39: 4	Boiler 1, 2, 3 or 4 is permanent lead boiler
3A: 0	No permanent last boiler	3A: 1 to 3A: 4	Boiler 1, 2, 3 or 4 is permanent last boiler

Coding 2 (cont.)

Coding in the factory setting		Possible change	
Multi-boiler control (cont.)			
3b: 1	Autonomous boiler parallel connection with supply temperature sensor	3b: 0	Autonomous boiler parallel connection without supply temperature sensor
		3b: 2	Autonomous boiler series connection without supply temperature sensor
		3b: 3	Autonomous boiler series connection with supply temperature sensor
		3b: 4	Sequential type of control with supply temperature sensor
3C: 2	Net calorific strategy 2 (see page 110)	3C: 0	Gross calorific strategy (see page 109)
		3C: 1	Net calorific strategy 1 (see page 110)
3d: 1	Output balance for gross calorific strategy and net calorific strategy 1	3d: 0	No output statement ***Please note:*** *Vitotronic 333, MW1S controls only in accordance with net calorific strategy 2*
3E: 0	Common supply pump ON/OFF subject to heat demand	3E: 1	Common supply pump OFF, if external disable (plug 143) is active
3F: 0	Without DHW tank priority for common supply pump	3F: 1	With DHW tank priority for common supply pump
General			
40:125	Actuator operating time for isolation valve, three-way mixing valve or mixing valve motor in conjunction with permanent return temperature control 125 seconds	40: 5 to 40:199	Operating time adjustable from 5 to 199 seconds

Coding 2 (cont.)

Coding in the factory setting		Possible change	
Multi-boiler control unit			
41: 31	No ECO threshold boiler 1	41:–30 to 41:+30	ECO threshold boiler 1 adjustable from –30 to +30 °C / –22 to +86 °F
42: 31	No ECO threshold boiler 2	42:–30 to 42:+30	ECO threshold boiler 2 adjustable from –30 to +30 °C / –22 to +86 °F
43: 31	No ECO threshold boiler 3	43:–30 to 43:+30	ECO threshold boiler 3 adjustable from –30 to +30 °C / –22 to +86 °F
44: 31	No ECO threshold boiler 4	44:–30 to 44:+30	ECO threshold boiler 4 adjustable from –30 to +30 °C / –22 to +86 °F
45: 60	Start-up integral threshold set to 60 Kelvin × minute	45: 1 to 45:255	Start-up integral threshold adjustable from 1 to 255 Kelvin × minute ***Please note:*** *If the threshold is exceeded, one boiler or one burner stage is switched ON*
46: 40	Shutdown integral threshold set to 40 Kelvin × minute	46: 1 to 46:255	Shutdown integral threshold adjustable from 1 to 255 Kelvin × minute ***Please note:*** *If the threshold is exceeded, one boiler or one burner stage is switched OFF*
47: 15	Shutdown differential set to 15 °C / 27 °F	47: 2 to 47: 30	Shutdown differential adjustable from 2 to 30 °C / 3.6 to 54 °F ***Please note:*** *One boiler or one burner stage will be switched OFF, if actual supply temperature exceeds the set supply temperature by this value*

Coding 2 (cont.)

Coding in factory setting		Possible change	
Multi-boiler control (cont.)			
48: 35	Only for sequential type of control: Control amplification of supply temperature set to 3.5 %/K	48: 1 to 48:199	Control amplification adjustable from 0.1 to 19.9 %/K 1 setting step = 0.1 %/K
49: 40	Only for sequential type of control: Control integral time of supply temperature set to 400 seconds	49: 1 to 49:199	Control integral time adjustable from 10 to 1990 seconds 1 setting step = 10 seconds
General			
4A: 0	Sensor 17 A not installed	4A: 1	Sensor 17 A installed (e.g. temperature sensor T1); will be recognised automatically
4b: 0	Sensor 17 B not installed	4b: 1	Sensor 17 B installed (e.g. temperature sensor T2); will be recognised automatically
4C: 0	Connection on plug 20 A1: Heating circuit pump	4C: 1	Primary pump – DHW tank heating system
		4C: 2	Do not adjust
		4C: 3	Do not adjust
4d: 1	Connection on plug 29: Shunt pump	4d: 0	Common supply pump
4E: 0	Connection on plug 52 A1: 3-way mixing valve for controlling return temperature	4E: 1	Three-way mixing valve
4F: 5	Time delay on activation shunt or common supply pump 5 minutes	4F: 0	No pump time delay
		4F: 1 to 4F: 60	Time delay adjustable from 1 to 60 minutes

Coding 2 (cont.)

Coding in the factory setting		Possible change	
DHW			
54: 0	Without solar control unit	54: 1	With Vitosolic 100; will be recognised automatically
		54: 2	With Vitosolic 200; will be recognised automatically
55: 0	DHW heating, differential ± 2.5 °C / 4.5 °F	55: 1	Adaptive DHW heating active (speed of temperature rise for DHW tank temperature is taken into account during DHW heating)
		55: 2	DHW tank temperature control with 2 DHW tank temperature sensors
		55: 3	DHW heating system
56: 0	Setting range for DHW temperature 10 to 60 °C / 50 to 140 °F	56: 1	Setting range for DHW temperature 10 to 95 °C / 50 to 203 °F ⚠ ***Safety instructions!*** ■ *Observe the max. permissible DHW temperature* ■ *Change adjustable high limit on boiler controls*
58: 0	Without auxiliary function for DHW heating	58: 1 to 58: 95	Input of a 2nd set DHW value; adjustable from 1 to 95 °C / 34 to 203 °F ***Please note:*** *The DHW tank is heated to the 2nd set value during the 4th DHW heating phase*
59: 0	DHW tank heating: Start-up point – 2.5 °C /– 4.5 °F Shutdown point + 2.5 °C /+ 4.5 °F	59: 1 to 59: 10	Start-up point adjustable from 1 to 10 °C / 2 to 18 °F below set value
5A: 0	No function	5A: 1	Supply temperature demand from DHW tank is maximum value of system
60: 20	During DHW heating, boiler water temperature is max. 20 °C / 36 °F higher than set DHW temperature	60: 10 to 60: 50	Difference between common supply temperature and set DHW temperature is adjustable from 10 to 50 °C / 18 to 90 °F
62: 10	DHW recirculation pump will off delay up to max. 10 minutes	62: 0	DHW recirculation pump without off delay
		62: 1 to 62: 15	Off delay adjustable from 1 to 15 minutes

Coding 2 (cont.)

Coding in factory setting		Possible change	
DHW (cont.)			
64: 2	During party mode and after external changeover of operating program with permanently normal room temperature: Enable constant DHW heating enabled and DHW recirculation pump ON	64: 0	No DHW heating, DHW recirculation pump OFF
		64: 1	DHW heating and DHW recirculation pump acc. to time program
66: 4	Input of set DHW value: at programming unit and all installed Vitotrol 300 remote control units	66: 0	At programming unit
		66: 1	At programming unit and remote control – system circuit A1
		66: 2	At programming unit and remote control – mixing valve circuit M2
		66: 3	At programming unit and remote control – mixing valve circuit M3
		66: 5	At remote control – system circuit A1
		66: 6	At remote control mixing valve circuit M2
		66: 7	At remote control – mixing valve circuit M3
67: 0	Without a 3rd set DHW set-point temperature	67: 1 to 67: 95	With Vitosolic: input of a 3rd set DHW set point temperature; adjustable from 1 to 95 °C / 34 to 203 °F Reloading suppression will be active below set temperature. DHW tank is heated only by solar heating system.
68: 8	With 2 DHW tank temperature sensors (coding 55 : 2): DHW tank heating switch-off point with set value × 0.8	68: 2 to 68: 10	Factor adjustable from 0.2 to 1; 1 setting step = 0.1
69: 7	With 2 DHW tank temperature sensors (coding 55 : 2): DHW tank heating starting point with set value × 0.7	69: 1 to 69: 9	Factor adjustable from 0.1 to 0.9; 1 setting step = 0.1
70: 0	DHW recirculation pump ON acc. to time program when DHW heating is enabled	70: 1	DHW recirculation pump ON according to time program
71: 0	DHW recirculation pump: ON acc. to time program	71: 1	OFF during DHW heating to first set value
		71: 2	ON during DHW heating to first set value
72: 0		72: 1	OFF during DHW heating to second set value
		72: 2	ON during DHW heating to second set value
73: 0		73: 1 to 73: 6	During time program 1x/h ON for five minutes to 6x/h ON for five minutes
		73: 7	Constantly ON
75: 0	DHW recirculation pump during economy mode: ON acc. to time program	75: 1	OFF

Coding 2 (cont.)

Coding in factory setting		Possible change	
General			
76: 0	Without communication module	76: 1	With LON communication module; will be recognised automatically
77: 5	LON participant number	77: 1 to 77: 99	LON participant number, adjustable from 1 to 99 ***Please note:*** *Allocate each number **only once***
78: 1	Enable LON communication	78: 0	Disable LON communication
79: 1	Control unit is fault manager	79: 0	Control unit is not fault manager
7A: 0	Without central control of heating circuits	7A: 1	With central control of: System boiler circuit A1
		7A: 2	Mixing valve circuit M2
		7A: 3	Mixing valve circuit M3
7b: 1	Transmitting time via LON BUS	7b: 0	No transmission of time via LON BUS
7F: 1	Detached house	7F: 0	Multi-occupancy house
80: 1	A fault message is issued, if a fault is active for at least 5 seconds	80: 0	Immediate fault message
		80: 2 to 80:199	Minimum fault duration before displaying a fault message is adjustable from 10 to 995 seconds; 1 setting step = 5 seconds
81: 1	Automatic daylight saving time changeover ***Please note:*** *Coding addresses 82 to 87 only feasible if coding 81 : 1 is set.*	81: 0	Manual changeover - daylight saving time
		81: 2	
		81: 3	Accept time via LON

Coding 2 (cont.)

Coding in factory setting		Possible change	
General (cont.)			
82: 3	Daylight saving time starts: March	82: 1 to 82: 12	January to December
83: 5	Daylight saving time starts: last week of month	83: 1 to 83: 5	Week 1 to week 5 of selected month
84: 7	Daylight saving time starts: last day of week (Sunday)	84: 1 to 84: 7	Monday to Sunday
85: 10	Daylight saving time ends: October	85: 1 to 85: 12	January to December
86: 5	Daylight saving time ends: last week of month	86: 1 to 86: 5	Week 1 to week 5 of selected month
87: 7	Daylight saving time ends: last day of week (Sunday)	87: 1 to 87: 7	Monday to Sunday
88: 0	Temperature display in Celsius	88: 1	Temperature display in Fahrenheit
8A:175	Display of those codings which can be adjusted with your system version	8A:176	Display of all codings, irrespective of system version or connected accessories
8E: 4	Displaying and acknowledging faults: at programming unit and all installed Vitotrol remote control units	8E: 0	At programming unit
		8E: 1	At programming unit and remote control – system / boiler circuit A1
		8E: 2	At programming unit and remote control – mixing valve circuit M2
		8E: 3	At programming unit and remote control – mixing valve circuit M3
90:128	Time constant for calculating adjusted outdoor temperature 21.3 hours	90: 0 to 90:199	Fast (low values) or slow (high values) matching of supply temperature subject to set value when outdoor temperature changes; 1 setting step = 10 minutes
91: 0	Without heating program changeover	91: 1	With heating program changeover (connection via plug [143]): Changeover affects: System circuit A1
		91: 2	Mixing valve circuit M2
		91: 3	System / Boiler circuit A1 and mixing valve circuit M2
		91: 4	Mixing valve circuit M3
		91: 5	System / Boiler circuit A1 and mixing valve circuit M3
		91: 6	Mixing valve circuits M2 and M3
		91: 7	All heating circuits (A1, M2, M3)
92:184	Do not adjust Address will only be displayed if 8A : 176 has been programmed.		

Coding 2 (cont.)

Coding in factory setting		Possible change	
General (cont.)			
94: 0	Without plug-in adaptor for external safety equipment	94: 1	With plug-in adaptor for external safety equipment; will be recognised automatically
96: 1	With mixing valve extension Printed Circuit Board	96: 0	Without mixing valve extension Printed Circuit Board
97: 2	Outdoor temperature at sensor connected to control unit will be transmitted via LON BUS to any connected Vitotronic 200-H	97: 0	No transmission via LON BUS
		97: 1	Outdoor temperature is adopted from LON BUS
98: 1	Viessmann system number (in conjunction with monitoring several systems within one LON system with Vitocom 300)	98: 1 to 98: 5	System number adjustable from 1 to 5
99: 0	Connection to terminals 2 and 3 in plug [143] (External disable/external mixing valve close) inactive	99: 1	Contact affects: No function
		99: 2	Mixing valve close Mixing valve circuit M2
		99: 3	No function
		99: 4	Mixing valve close Mixing valve circuit M3
		99: 5	No function
		99: 6	Mixing valve close Mixing valve circuits M2 and M3
		99: 7	No function
		99: 8	External disable
		99: 9	No function
		99: 10	External disable and mixing valve close Mixing valve circuit M2
		99: 11	No function
		99: 12	External disable and mixing valve close Mixing valve circuit M3
		99: 13	No function
		99: 14	External disable and mixing valve close Mixing valve circuits M2 and M3
		99: 15	No function

Coding 2 (cont.)

Coding in factory setting		Possible change	
General (cont.)			
9A: 0	Connection to terminals 1 and 2 in plug [143] (External mixing valve open) inactive	9A: 1	Contact affects: No function
		9A: 2	Mixing valve open Mixing valve circuit M2
		9A: 3	No function
		9A: 4	Mixing valve open Mixing valve circuit M3
		9A: 5	No function
		9A: 6	Mixing valve open Mixing valve circuits M2 and M3
		99: 7	No function
9b: 70	Set minimum supply temperature for external demand (input [146]) 70 °C / 158 °F	9b: 0	Input [146] blocked
		9b: 1 to 9b:127	Set temperature adjustable from 1 to 127 °C / 34 to 261 °F
9C: 20	Monitoring LON participants When there is no response from a participant, values defaulted inside control unit continue to be used for a further 20 min. Only then will a fault message be triggered.	9C: 0	No monitoring
		9C: 5 to 9C: 60	Time adjustable from 5 to 60 minutes
9d: 0	Without Input Module 0 to 10V	9d: 1	With Input Module 0 - 10V; will be recognized automatically
9F: 8	With mixing valve circuit: Differential temperature 8 °C / 14.4 °F	9F: 0 to 9F: 40	Differential temperature adjustable from 0 to 40 °C/ 0 to 72 °F

Coding 2 (cont.)

Coding in factory setting		Possible change	
System circuit/mixing valve circuit			
A0: 0	Without remote control	A0: 1	With Vitotrol 200
		A0: 2	With Vitotrol 300
A2: 2	With DHW tank priority applicable to heating circuit pump and mixing valve	A2: 0	Without DHW tank priority applicable to heating circuit pump and mixing valve
		A2: 1	With DHW tank priority for mixing valve: Mixing valve is closed during DHW heating; heating circuit pump operates
		A2: 3 to A2: 15	Do not adjust
A3: 2	Outdoor temp. below 1 °C / 34 °F: Heating circuit pump ON Outdoor temp. above 3 °C / 37 °F: Heating circuit pump OFF *For settings below 1 °C / 34 °**F** pipes outdoor thermal insulation shell of building can freeze up, particularly during standby mode, e.g. during holidays.*		Heating circuit pump (see back of manual for conversion chart) ON at OFF at A3: –9 –10 °C –8 °C A3: –8 – 9 °C –7 °C A3: –7 – 8 °C –6 °C A3: –6 – 7 °C –5 °C A3: –5 – 6 °C –4 °C A3: –4 – 5 °C –3 °C A3: –3 – 4 °C –2 °C A3: –2 – 3 °C –1 °C A3: –1 – 2 °C 0 °C A3: 0 – 1 °C 1 °C A3: 1 0 °C 2 °C A3: 2 1 °C 3 °C to A3: 15 to 14 °C 16 °C
A4: 0	With frost protection	A4: 1	No frost protection Adjustment only possible if coding A3 : –9 is set. *Please observe note regarding coding address A3.*

Coding 2 (cont.)

Coding in factory setting		Possible change	
System circuit/mixing valve circuit (cont.)			
A5: 5	With heating circuit pump logic function (economy circuit): Heating circuit pump OFF, if outdoor temperature (AT) is 1 K higher than set room temperature (RT_{set}) $AT > RT_{set} + 1\ K$	A5: 0	Without heating circuit pump logic function
		A5: 1 A5: 2 A5: 3 A5: 4 A5: 5 A5: 6 A5: 7 to A5: 15	With heating circuit pump logic function: Heating circuit pump OFF, if $AT > RT_{set} + 5\ K$ $AT > RT_{set} + 4\ K$ $AT > RT_{set} + 3\ K$ $AT > RT_{set} + 2\ K$ $AT > RT_{set} + 1\ K$ $AT > RT_{set}$ $AT > RT_{set} - 1\ K$ to $AT > RT_{set} - 9\ K$
A6: 36	Extended economy function **inactive**	A6: 5 to A6: 35	Extended economy function active, i.e. burner and heating circuit pump will be switched OFF, and mixing valve will be closed at a variable value which is adjustable between 5 and 35 °C / 41 and 95 °F plus 1 °C / 2 °F. This value is based on dampened outdoor temperature, comprising actual outdoor temperature and a time constant which takes cooling down of an average building into consideration.
Mixing valve circuit			
A7: 0	Without mixing valve economy function	A7: 1	With mixing valve economy function (extended heating circuit pump logic). Heating circuit pump also OFF, if mixing valve was closed longer than 12 minutes. Heating circuit pump ON, ■ if mixing valve changes to control mode or ■ after DHW tank heating (for 12 minutes) or ■ If there is a risk of frost
System circuit/mixing valve circuit			
A9: 7	With pump stop function: Heating circuit pump OFF during set-point value changes (by changing operating mode or changes on rotary selector or button)	A9: 0	Without pump stop function
		A9: 1 to A9: 15	Pump stop function adjustable from 1 to 15
Mixing valve circuit			
AA: 2	With output reduction through temperature sensor 17 A	AA: 0	Without output reduction
		AA: 1	No function

Coding 2 (cont.)

Coding in factory setting		Possible change	
Systems/mixing valve circuit			
b0: 0*1	With remote control: Heating mode/ reduced mode: with outdoor reset	b0: 1	Heating mode: with outdoor reset Reduced mode: with room temperature feed-back
		b0: 2	Heating mode: with room temperature feed-back Reduced mode: with outdoor reset
		b0: 3	Heating mode/ reduced mode: with room temperature feed-back
b1: 0	Do not adjust		
b2: 8*1	With remote control unit and for heating circuit, operation with room temperature feed-back must be programmed: Room influencing factor 8	b2: 0	No room influence
		b2: 1 to b2: 31	Room influence factor adjustable from 1 to 31
b3: 0*1	Do not adjust		
Systems/mixing valve circuit (cont.)			
b5: 0*1	With remote control: Without room temperature dependent heating circuit pump logic function	b5: 1	■ Heating circuit pump OFF, if actual room temperature (RT_{actual}) is 1.5 °C / 2.7 °F higher than set room temperature (RT_{set}) $RT_{actual} > RT_{set} + 1.5$ °C / 2.7 °F ■ Heating circuit pump ON, if actual room temperature (RT_{actual}) is 0.5 °C / 0.9 °F higher than set room temperature (RT_{set}) $RT_{actual} > RT_{set} + 0.5$ °C / 0.9°F
b6: 0*1	With remote control unit and for heating circuit, operation with room temperature feed-back must be programmed: Without quick heat-up/quick setback	b6: 1	With quick heat-up/quick setback (see page 114)
b7: 0*1	With remote control unit and for heating circuit, operation with room temperature feed-back must be programmed: Without start-up optimization	b7: 1	With start-up optimization: Max. offset 2 hours 30 minutes
		b7: 2	Max. off-set 15 hours 50 minutes

*1

Change coding – for system circuit A1 only for boilers without lower temperature limit – for mixing valve circuit only, if remote control unit affects this heating circuit.

Coding 2 (cont.)

Coding in factory setting		Possible change	
Systems/mixing valve circuit (cont.)			
b8:10* [1]	With remote control unit and for heating circuit, operation with room temperature feed-back must be programmed: Heat-up gradient – start-up optimization 10 minutes/ °C	b8: 11 to b8:255	Heat-up gradient adjustable from 11 to 255 minutes/ °C
b9: 0* [1]	With remote control unit and for heating circuit, operation with room temperature feed-back must be programmed: Without learning start-up optimization	b9: 1	With learning start-up optimization
C0: 0* [1]	With remote control: Without shut-down optimization	C0: 1	With shutdown optimization: Max. off-set 1 hour
		C0: 2	Max. off-set 2 hours
C1: 0* [1]	With remote control: Without shut-down optimization	C1: 1 to C1: 12	With shutdown optimization: Max. off-set from 10 to 120 minutes; 1 setting step = 10 minutes
C2: 0* [1]	With remote control: Without learning shutdown optimization	C2: 1	With learning shutdown optimization
Mixing valve circuit			
C3:125	Mixing valve operating time 125 seconds	C3: 10 to C3:255	Operating time adjustable from 10 to 255 seconds

*1

Change coding – for system circuit A1 only for boilers without lower temperature limit – for mixing valve circuit only, if remote control unit affects this heating circuit.

Coding 2 (cont.)

Coding in factory setting		Possible change	
Mixing valve circuit			
C4: 1	System dynamics – mixing valve control characteristics	C4: 0 to C4: 3	Controller responds too quickly (cycles between open and close): select a higher value. Controller acts too slowly (temperature is not maintained correctly): select a lower value.
System circuit/mixing valve circuit			
C5: 20	Electronic minimum supply temperature limit 20 °C/ 68 °F	C5: 1 to C5:127	Minimum limit adjustable from 1 to 127 °C / 34 to 261 °F; only effective with room heating with normal temperature
C6: 75	Electronic maximum supply temperature limit 75 °C/ 167 °F	C6: 10 to C6:127	Maximum temperature limit adjustable from 10 to 127 °C / 50 to 261 °F
C8:31 *1	With remote control unit and for heating circuit, operation with room temperature feed-back must be programmed: Without limiting room influence	C8: 1 to C8: 30	Room influence limit adjustable from 1 to 30 K
d5: 0	External heating program changeover via plug 143: Heating program changes to constant operation with reduced room temperature	d5: 1	Heating program changes to constant operation with normal room temperature
Systems/mixing valve circuit (cont.)			
E1: 1	With remote control: Normal day temperature is adjustable at remote control unit from 10 to 30 °C / 50 to 86 °F	E1: 0	Normal day temperature adjustable from 3 to 23 °C/ 37 to 74 °F
		E1: 2	from 17 to 37 °C / 63 to 99 °F
E2: 50	With remote control: No display correction of actual room temperature	E2: 0 to E2: 49	Display correction – 5 °C / – 9 °F to display correction – 0.1 °C / – 0.18 °F
		E2: 51 to E2: 99	Display correction + 0.1 °C / +0.18 °F to display correction + 4.9 °C / 8.8 °F

**1*

Change coding – for system circuit A1 only for boilers without lower temperature limit – for mixing valve circuit only, if remote control unit affects this heating circuit.

Coding 2 (cont.)

Coding in factory setting		Possible change	
Mixing valve circuit			
F1: 0	Slab curing function inactive	F1: 1 to F1: 4	Slab curing function adjustable in accordance with four optional temperature-time profiles (see page 168) ***Please note:*** *Observe slab curing supplier's instructions.* Observe local regulations. Report to be provided by heating contractor must contain following details: ■ Heat-up data with their respective supply temperatures ■ Max. supply temperature achieved ■ Operating condition and outdoor temperature during handover Function continues after power failure or after control unit has been switched OFF. Heating program will be started, after screed-drying function has been completed or if address is manually set to 0.
Systems/mixing valve circuit			
F2: 8	Time limit for party mode 8 hours*1	F2: 0	No time limit for party mode*1
		F2: 1 to F2: 12	Time limit for party mode adjustable from 1 to 12 hours*1

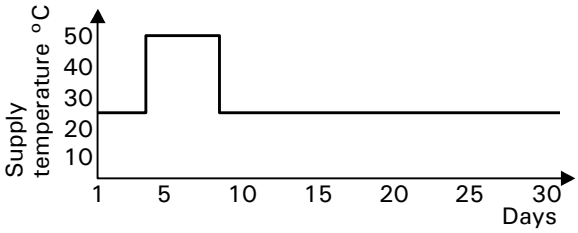
*1

*Party mode ends **automatically** with heating program when system changes over to operation with normal room temperature.*

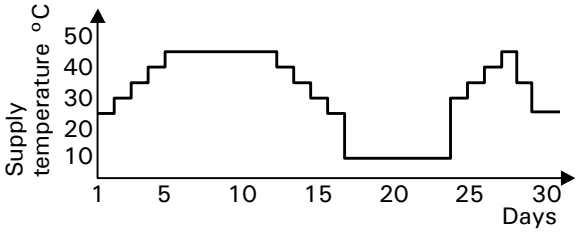
Slab curing function diagram

Coding, see page 167.

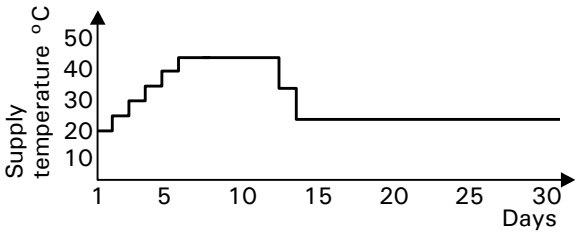
Temperature-time profile 1 (coding F1 : 1)
(See back of manual for temperature conversion chart)



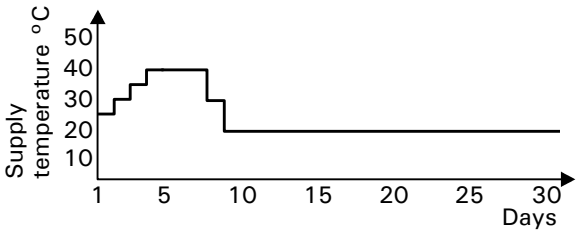
Temperature-time profile 2 (coding F1 : 2)



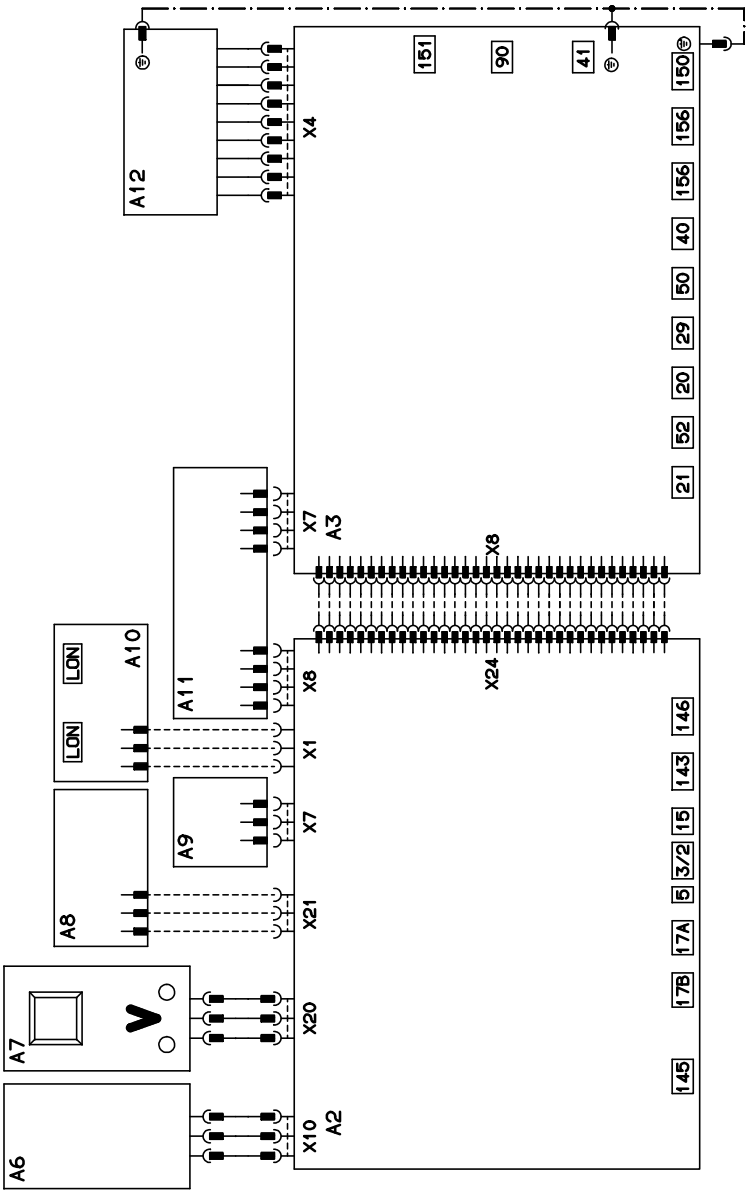
Temperature-time profile 3 (coding F1 : 3)



Temperature-time profile 4 (coding F1 : 4)

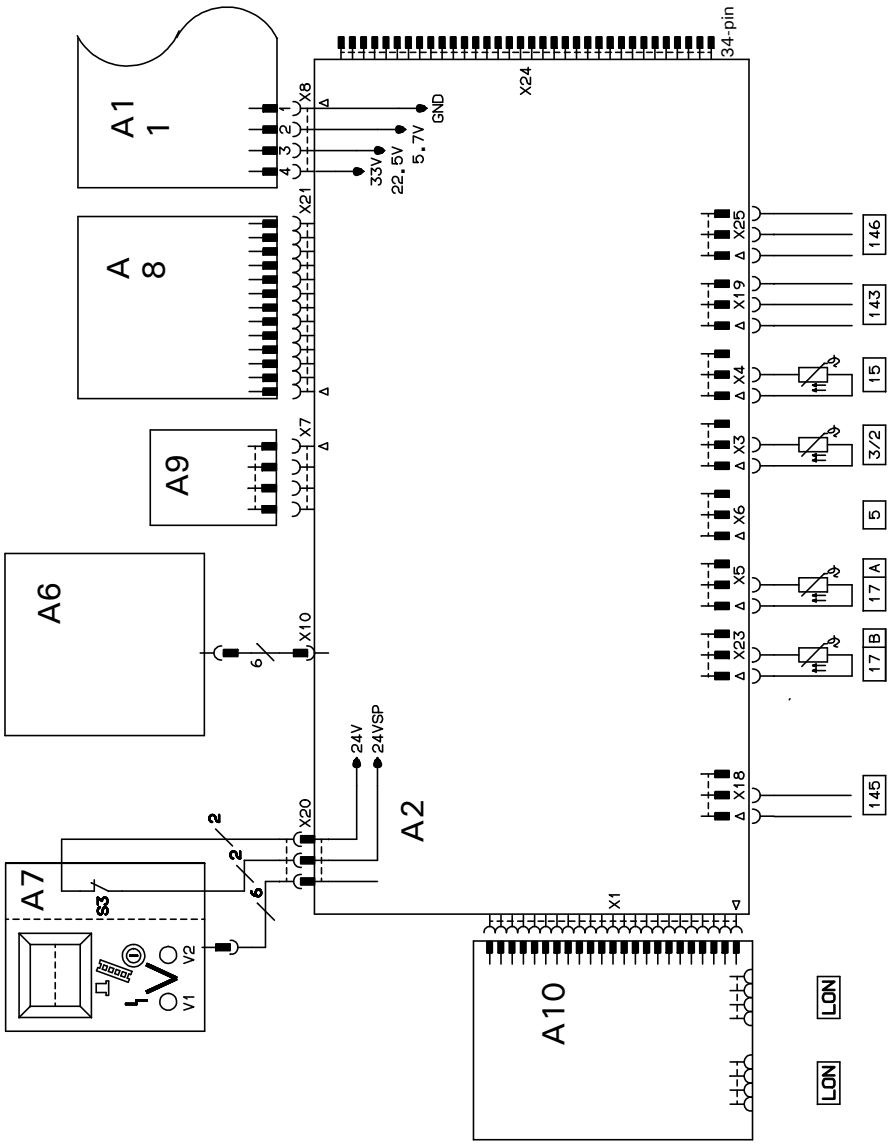


Summary



A2 Low voltage motherboard
A3 Line voltage motherboard
A6 Programming unit
A7 Optolink Printed Circuit Board/override switch
A8 Supplementary Printed Circuit Board
A9 Boiler coding card
A10 LON communication module
A11 Power supply unit Printed Circuit Board
A12 Boiler control unit

Low voltage motherboard



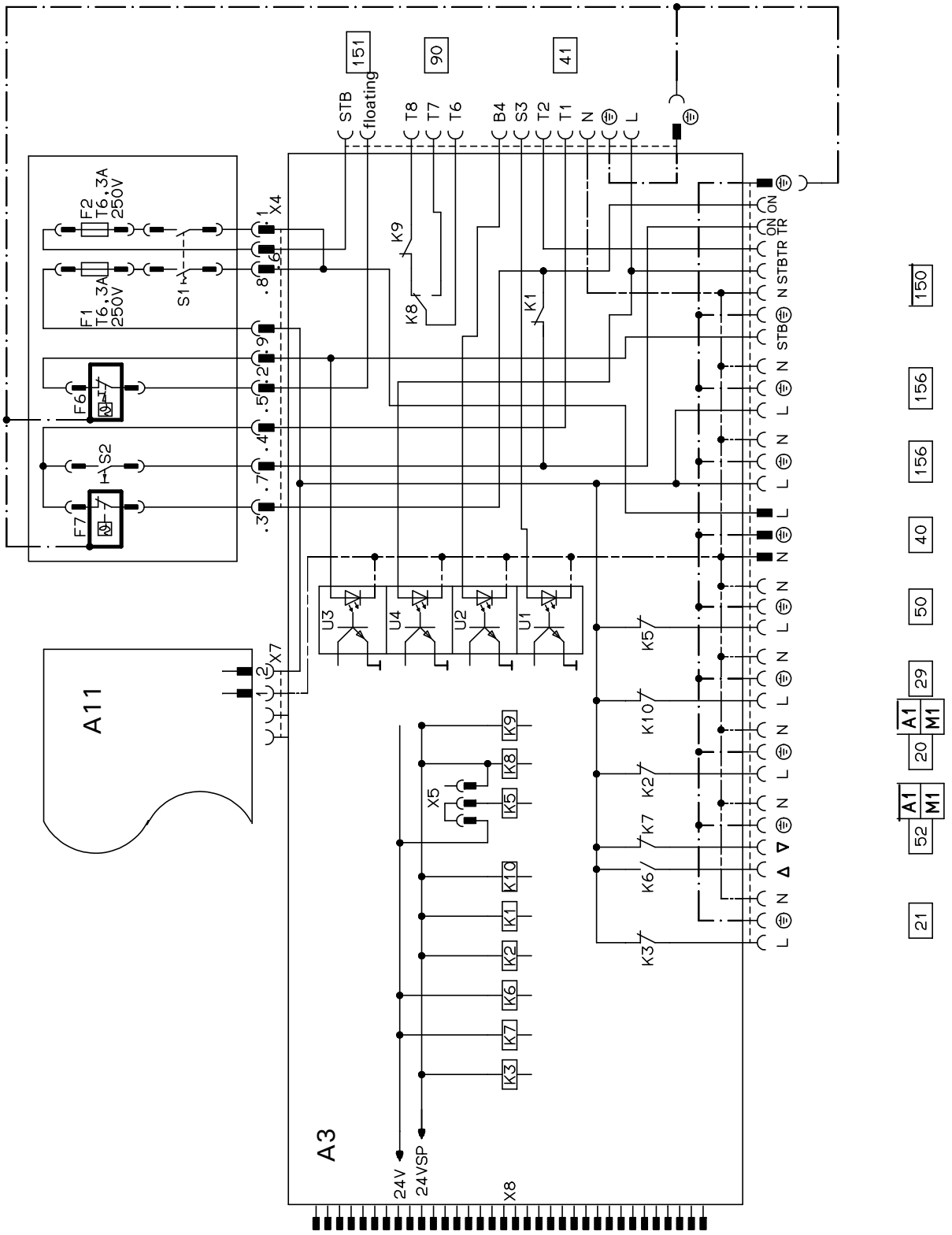
- 3 Boiler temperature sensor
- 5 No function
- 15 Flue gas temperature sensor
- 17 A Temperature sensor T1
- 17 B Temperature sensor T2
- 143 Connection for external equipment
- 145 KM BUS
- 146 Connection for external equipment
- LON Interconnecting cable for data transfer between control units
- S3 Override switch
- V1 Fault indicator (red)
- V2 ON/OFF indicator (green)

Line voltage motherboard

[20] Control output
[21] DHW pump
[29] Shunt or boiler circuit pump
[40] Power supply, 120 VAC
[41] Burner, connection to DIN 4791
[50] Compiled failure alarm
[52] Boiler isolation valve
or
Boiler return valve
[90] Burner stage 2/mod.
[150] External connections
ⓐ External safety equipment (remove jumper when connecting)
ⓑ External disable (remove jumper when connecting)
ⓒ External burner activation
[151] Safety circuit
[156] Power supply for connection accessories

F1, F2 Fuses
F6 Fixed high limit 120 °C/248 °F (99 or 110 °C/210 or 230 °F)
F7 Adjustable high limit 95 °C / 203 °F (100 °C, 110 °C / 212 °F, 230 °F)
K1-K10 Relays
S1 ON/OFF switch
S2 Test switch

Line voltage motherboard (cont.)

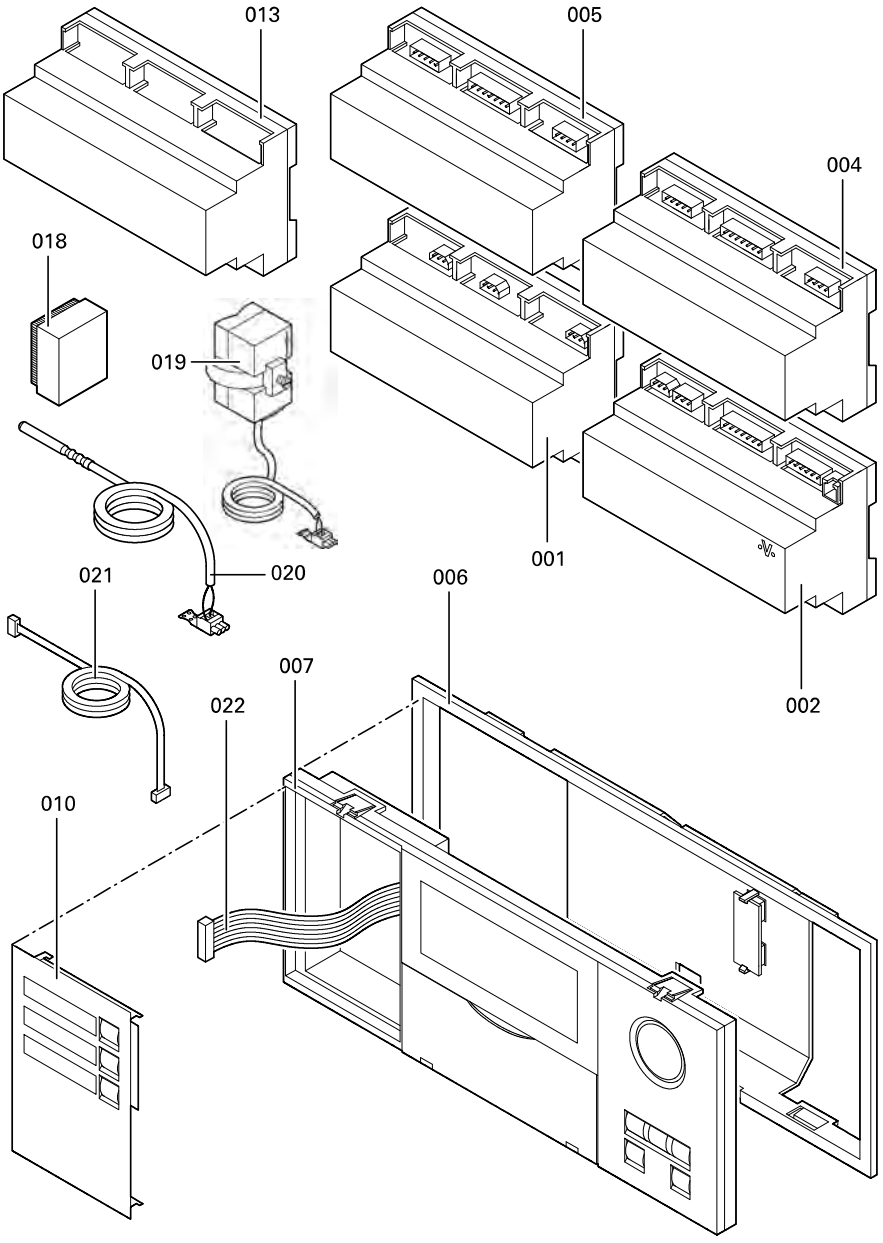


Parts list Vitotronic 300-K, MW1S

When ordering spare parts
Quote the part and serial no. (see type plate) and the item no. of the individual part (as per this parts list).
Obtain common parts from your local supplier.

Parts
001 Power supply module 120VAC
002 Cascade electronics module
004 Power module
005 Extension module
006 Frame for programming unit
007 Programming unit
010 Front panel with heating circuit selector
013 Empty housing
018 Outdoor temperature sensor
019 Strap-on temperature sensor
020 DHW tank temperature sensor
021 Connecting cable
022 Ribbon cable

Parts not shown
011 Set of plug-in terminals
012 Low voltage supply cables
014 Installation and service instructions
016 Operating instructions



Specification – Vitotronic 100, GC1

Rated voltage:	120VAC
Rated frequency:	60 Hz
Rated current:	2 × 6 A~
Power consumption:	5 W
Safety class:	I
Protection:	IP 20 D to EN 60529, safeguard through design and installation
Function:	Type 1B to EN 60730-1
Permissible ambient temperature	
■ during operation:	0 to 40 °C 32 to 148 °F Installation in living accommodation and boiler rooms (normal ambient conditions)
■ during storage and transport:	–20 to 65 °C – 4 to 149 °F

Relay output rating at 120VAC for

■ Switching output [20]:	2 FLA*1
■ Shunt or boiler circuit pump [29]:	2 FLA*1
■ Central fault message [50]:	2 FLA*1
■ Isolation valve [52]:	1 FLA*1
or constant return temperature control [52]:	0.1 FLA*1
■ Burner Plug [41]:	3 FLA
Plug [90] – two stage:	0.5 FLA
– modulating:	0.1 FLA

*1

Total max. 6A~.

Specification – Vitotronic 300-K, MW1S

Rated voltage: 120VAC
Rated frequency: 60 Hz
Rated current: 4A
Power consumption: 10 W
Safety class: I
Protection: IP 20 D to EN 60529, safeguard through design and installation
Function: Type 1B to EN 60730-1
Permissible ambient temperature
- during operation:
  0 to 40 °C
  32 to 104 °F
  Installation in living accommodation and boiler rooms (normal ambient conditions)
- during storage and transport:
  –20 to 65 °C
  – 4 to 149 °F

Relay output rating at 230 V~ for
- Heating circuit pump or primary pump DHW tank heating system [20]: 2 FLA
- DHW tank heating pump [21]: 2 FLA
- DHW circulation pump [28]: 2 FLA
- Shunt or distribution pump [29]: 2 FLA
- Central fault message [50]: 2 FLA
- Three-way return valve or isolation valve 0.1 FLA

Applicability

Vitotronic 100, type GC1,
From serial no. 7143 003 000 000 000
From serial no. 7187 096 000 000 000

Vitotronic 300-K, MW1S,
From serial no. 7143 438 000 000 000
From serial no. 7187 114 000 000 000

Quick Reference

°C	°F
-40	-40
-35	-31
-25	-13
-20	-4
-18	0
-16	+3
-14	+7
-12	+10
-10	+14
-9	+16
-8	+18
-7	+19
-6	+21
-5	+23
-4	+25
-3	+27
-2	+28
-1	+30
0	+32
+1	+34
+2	+36
+3	+37
+4	+39
+5	+41
+6	+43
+7	+45
+8	+46
+9	+48
+10	+50
+12	+54
+14	+57
+16	+61
+18	+64
+20	+68
+25	+77
+30	+86
+35	+95
+40	+104
+50	+122
+60	+140
+70	+158
+80	+176
+90	+194
+100	+212
+110	+230

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Technical information subject to change without notice.

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